D²XCEL

Supply Chain Management & Trade Finance

1. Short Description

The integration of digital and deep-tech technologies, such as blockchain, quantum computing, the Internet of Things (IoT), and artificial intelligence in Enterprise Supply Chain Management (SCM) and trade finance, can reconfigure and revolutionize the efficient movement of goods and services, while enhancing confidence in commercial transactions across supply chains and better connecting multiple entities in Europe and worldwide. Real-time data analytics, predictive modeling, and autonomous decision-making can support organizations in making informed decisions and anticipating potential disruptions before they occur. With consumers increasingly valuing ethical sourcing, sustainability, and fair labor practices, businesses need to showcase transparent supply chains to build trust and maintain brand integrity.

The promise of technology-enhanced trade finance may also transform traditional practices in banking, investment, insurance, and financial management by contributing to the digitalization of paper-intensive processes, for example Electronic Bills of Lading (eBOL) and other digital trade documentation. Moreover, emerging technologies may lead to the creation of more efficient and convenient services for payments, investments, and financing businesses or may ignite the development of novel types of trade-facilitating financial arrangements. We are searching for innovative digital and deep-tech solutions with transformative potential to impact traditional paradigms, processes and actors of supply chain management and trade finance ecosystems, making them more efficient, transparent, agile, interconnected, and resilient.

The Problem

Traditional enterprise supply chain management has long relied on established processes, often hindered by paper trails, manual interventions, and a lack of real-time information. In recent years, global supply chains have also witnessed unprecedented challenges and complexities driven by disruptions, increased globalization, and technological advancements. The COVID-19 pandemic, geopolitical tensions, natural disasters, and infiltration by organized crime have created shortages of materials and products, causing delays and increasing costs. At the same time, cutting-edge digital and deep-tech solutions have been emerging at an unprecedented pace, becoming catalysts for transformative change. These innovations are enabling novel business models, fostering collaborative ecosystems, and revolutionizing how stakeholders interact and transact within the supply chain. Although digital and novel solutions hold immense promise, its adoption faces several challenges, including:

- **Complexity of the supply chain** and lack of coordination and collaboration between various parties to maintain effective communication;
- **Technology selection and integration** in existing processes, as well as keeping up with advancements in digital and deep-tech developments;
- **Policy changes and regulations** varying across industries and countries related to trade, product safety, environmental standards and labour practices;
- **Interoperability issues** related to lack of standardized practices;
- **Cybersecurity threats**, data breaches, unauthorized access and malware attacks;
- **Real-time visibility** across the entire supply chain for timely decision-making and risk management;

This project has received funding from the European Union under grant agreement 101121100.

European Innovation Council

Funded by the European Union

- **Risk management** regarding changes in price increases, including labour, transportation and raw materials;
- **Labour shortages** and lack of skills in supply chain management and digital capabilities to navigate complexities of modern supply chains;
- **Uncertainty in consumer demand** and forecasting future needs;
- **Sustainability and environmental concerns** related to regulations and consumer demand for supply chains transparency and practices to reduce environmental impact.

In response to these challenges, digital and deep-tech solutions may have transformative potential to reshape the traditional paradigms of supply chain management and trade finance.

2. Sustainability and Sovereignty Impact Potential for Europe

Developing and deploying innovative solutions for Enterprise Supply Chain Management and Trade Finance is essential for Europe to:

- To enable supply chain resilience, responsiveness and agility
- To enable cyberthreat resilience
- To improve competitiveness and innovativeness
- To monitor and achieve sustainability
- To improve national economic security

3. Deeptech and Digital Innovation Potential

A broad range of Deeptech and Digital innovations will be considered to address the challenges mentioned above. These include, but are not restricted to:

- Internet of Things (IoT)
- Blockchain (BC), Artificial intelligence (AI) and Machine learning (ML)
- Cloud Computing
- Quantum Technologies and Quantum Computing
- Big Data, Predictive and Prescriptive Analytics
- Nextgen robotics and hyper automation
- Advanced photonics and materials science
- Cybersecurity solutions, including security mesh
- Autonomous things (drones, self-driving vehicles, autonomous robotics)
- Composable Application Architecture
- 6G, Digital Twins, Virtual reality (VR), Augmented Reality (AR) and Extended Reality (XR)
- Smart operations, integration services and mobile assets optimization
- Ecosystem engagement and collaboration applications
- ESG applications, sustainability tools and circular supply chains solutions

4. European Market Potential

Supply chain management is critical to trade and GDP, as trade represented 63% of global GDP in 2022. According to Mc Kinsey, the implementation of an electronic bill of lading could save $6.5 billion in direct costs and enable $40 billion in global trade. Venture capital investment in supply chain tech that includes enterprise supply chain management and logistics encountered for $6.8 billion from 2018 to 2022 according to Pitchbook. The European Enterprise Supply Chain Management Software market is projected to reach US$4.57bn in 2024 expanding to US$5.61bn by 2028 according to Statista and compared to US$10.2bn in 2024 for US market. The global SCM market is projected to reach US$20.27bn in 2024 and US$24.19bn by 2028.

This project has received funding from the European Union under grant agreement 101121100.

European Innovation Council

Funded by the European Union