

UNIVERSITY OF SALERNO



DEPARTMENT OF INDUSTRIAL ENGINEERING

*Ph.D. Course in Industrial Engineering
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Blockchain and new organizational models for the innovation management in the supply chain

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Abstract

Recently, research and entrepreneurs have shifted their attention to new technologies such as blockchain and cryptocurrencies to understand how they can be deployed within their organizations. In particular, the adoption of blockchain is moving towards implementation within supply chains to track and make transparent companies' activities. Blockchain is a decentralized technology that allows data to be recorded on immutable ledgers that are provable by everyone, making it a secure and reliable tool. In addition, the use of smart contracts, Internet of Things and RFID allow optimizing operations management. Moreover, the lack of adoption by managers and the high implementation costs hinder their application.

This thesis provides an overview of blockchain's opportunities and challenges for supply chain management. It investigates how blockchain can be integrated with other technologies following the Industry 4.0 perspective and evaluating its implementation in enabling sustainable practices. To date, there are still few real cases and projects in full operation. Hence, the purpose of this thesis is to assess *ex-ante* the potential benefits that technology can bring to operations management within supply chains in specific areas such as inventory management, logistics and order management. Based on a cheese supply chain, the research compares and measures traditional practices with a scenario in which blockchain technology is included. Specifically, the scenarios measure the impacts on time that blockchain technology can carry out by automating several operations compared to the traditional solution. Consequently, the introduction of a cost analysis will allow understanding and quantifying the advantages and disadvantages that technology carry out to each area and actor. The implications that would derive downstream of these analyses would allow a greater adoption of the technology by entrepreneurs and an in-depth study by researchers to search new solutions and strategies for optimizing supply chains.