Forest certification schemes, such as FSC and PEFC, are voluntary tools that aim to ensure compliance with sustainable forest management standards. The ability to trace a forest product through the entire supply chain has been possible for some time with the implementation of automatic identification systems. The research presents an economic methodological approach adopted to evaluate, supply and demand side, the potential of application of a new traceability system for forest supply chains: blockchain technologies.

### The traceability systems

An info-tracking system allows to keep records reporting, from supplier to consumer, the supply chain of an item. Today, it is possible to obtain this information using different markers: smart tags. For example, there are the 1D and 2D barcodes (Quick Response code), commonly used in the food sector, and others such as RFID (Radio Frequency Identification) and NFC (Near Field Communication) technologies, commonly used in the payment sector. These systems support the achievement of chain of custody certifications.

### The blockchain technologies

The blockchain technologies belong to the distributed ledger category and allow to manage cryptographic transactions on a decentralised peer-to-peer network, where each participant (computer/client) is represented by a node. It is a database structured as a chain of blocks, each containing several transitions previously validated by consensus by all the nodes in the network (Pazaitis et al., 2017). Each block, in addition to the transitions, contains a unique alphanumeric code (hash) that guarantees its uniqueness and the link with the previous block and a timestamp that protects its immutability (Figorilli et al., 2018). The main features of blockchains are security based on cryptography, transparency, traceability of transitions and immutability of the ledger.

Given their immutability characteristics, blockchain technologies are well suited to being integrated with other technologies used as info-tracking systems, such as RFID and NFC, in such a way as to integrate quality and traceability information into an online information system.

### The economic methodological approach

The approach includes an evaluation of the costs of implementing blockchain technologies in terms of both the development of the architecture and the application used as a database for data collection. With the addition of the cost of smart tags used to monitor the traceability of the item (the forest material), the time and cost of operator to place, manage the smart tags and collect the data and the switching costs for the consumer.

On the demand side, instead, a monetary economic valuation method will be used, based on the stated preferences (e.g., Contingent Valuation or Choice Modelling methods), which will allow to elicit from the consumers, their willingness to pay a "premium" price, for a certified and tracked product with such a traceability system.

### The next steps

The adoption of blockchain technologies allows the creation of a new form of social relationship and trust, where all participants in the network can verify and have total transparency on decisions and transitions. In the forestry sector, this could affect different stakeholders, such as certification bodies, companies and consumers. The fields of application are many, as reported in different studies, such as in the counterfeit products, for combating information asymmetry or in forest management schemes and different chains of custody (Casino et al., 2019; Düdder & Ross, 2017).

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**References**


