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## **Investigating food losses issue from a network perspective**

*Fiore M., Pellegrini G., Contò F., University of Foggia, Department of Economics, ITALY*

### **Abstract**

Objectives - The causes of food losses can be traced in lacking of proceduralisation and rationalization of the agri-food chains and stakeholders' networks (Salihoglu et al., 2018). Then, a negligence behaviour and life-style toward wasteful (Sullivan, 2011; Stuart, 2009), an inefficient management of resources, and simultaneously huge levels of undernourishment determine a pressing and global problem (Koester, 2017 and 2015; Buzby & Hyman, 2012; OECD, 2008): the globality of the problem stands out by also considering the consequent Greenhouse gas (GHG) emissions deriving from an useless production that remain in the atmosphere for thousands of years (Chaboud & Daviron, 2017; Beretta et al., 2017). A shared, communicated and proceduralized strategy that improves the efficiency of the entire supply chain can certainly be a good starting point. Indeed, possible causes can be due to strong unawareness, and to lacking efficient management of the involved resources and to a not-shared policies and strategies.

Several initiatives are over the world but missing communication and lack of knowledge seems to be the issue to be dealt with, at the level of the single supply chain. Therefore, building a chain's sustainable communication and an innovative approach can represent a good success chance in order to reduce and to improve the food loss concern. Social ties play a significant role in agricultural knowledge exchange (Cadger et al., 2016) particularly in countries very suited to agriculture and depending on rural structure. The assumption is that the chain works as a not oriented graph: different positions, loads, and roles in a network depends on the operational opportunities and limitations, especially if we focus on the access to knowledge and to transfer knowledge (Buchmann, 2015). Networks change own structure over years and thus position and role of actors and network actors number in the network changes and can find new equilibrium. The aim of this paper is to investigate from a network perspective the food losses issue within the relationship between agri-food chain spatial proximity and innovation networks.

Methodology - In order to study the structure of an agri-food chain, the social network analysis (SNA) can represent an useful method to investigate the interaction of different processes. The added value of the SNA is based on the important assumption that the

behavior of a chain actor influences other actors' behaviors. The first step of the SNA is the data collection related to nodes and ties of networks with the scope to understand where the node crucial for the food losses in a selected agri-food chain (Fruit chain) can be individuated. By using a social network approach, we chart the structure of agrarian knowledge networks in some 'communities' in the selected chain, which have been mainly exposed to food losses.

Expected results - Greater knowledge networks can certainly improve the food loss management along the chain. Expected results are the definition of a model, by means of a socio-matrix of graphs, able to describe the relational structure of a chain and to observe its impact on the "functioning" of the system and its influence on chain individual actors. This has strong social, ethics and economic implications. As far as we know, from the literature review, it seems this work represents the first application of SNA aimed at investigating the food losses issue with the aim of evaluating the role of the social networks along the chains.

**Keywords:** food losses, chain network, social network analysis

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