



*Research article*

## **Corporate social responsibility in agri-food firms: the relationship between CSR actions and firm's performance**

**Adele Coppola<sup>1,\*</sup>, Sara Ianuario<sup>2</sup>, Severino Romano<sup>1</sup> and Mauro Viccaro<sup>1</sup>**

<sup>1</sup> School of Agricultural, Forestry, Food and Environmental Sciences, University of Basilicata, 85100 Potenza, Italy

<sup>2</sup> PhD in Environmental and agri-food economics, Naples, Italy

\* **Correspondence:** Email: [adele.coppola@unibas.it](mailto:adele.coppola@unibas.it); Tel: +39 0971205433.

**Abstract:** Over the last years, many firms introduced environmental and social sustainability in their business mission and adopted Corporate Social Responsibility (CSR) as the operative tool of a new business model. Several studies focused on the relationship between CSR and firm's performance or more generally value creation in the supply chain. The present work aims at giving further insight into this relationship with reference to the agri-food sector. It wants to illustrate a conceptual framework of this relationship and represents a preliminary empirical work aimed at understanding and testing some main link. Through multivariate techniques data on CSR actions were analysed to identify the firm CSR strategies and using the correlation analysis and non-parametric tests the link between CSR strategies and firm performance was tested, both directly and through innovation variables.

Results highlighted that firms with lower CSR orientation have also lower profitability levels and showed the association between the adoption of specific innovations and some CSR patterns, while the connection innovation-performance was not statistically proved. The small size of the sample does not allow a conclusive analysis. Nevertheless, results provide useful insights to better specify the conceptual model CSR-performance.

**Keywords:** sustainability, corporate social responsibility, performance, innovation, Agri-food system

---

## 1. Introduction

Over the last years, many firms introduced environmental and social sustainability in their business mission and adopted Corporate Social Responsibility (CSR) as an operative tool of a new business model [1,2]. CSR is a rather wide and somewhat vague concept because it has progressively included different domains to reflect the evolving of society's concerns, but also because it has been analysed by different approaches and points of view [3–5].

According to the Carroll approach [6,7] “Corporate social responsibility encompasses the economic, legal, ethical, and discretionary (philanthropic) expectations that society has of organizations at a given point in time”. Then, in Carroll's definition CSR is related to categories of business responsibility and has a dynamic nature, as it changes with society's expectations. However, very different definitions of CSR are available in the literature. Dahlsrud [4] found 37 different definitions of CSR and by analysing them identified five main dimensions that characterize this concept: environmental, social, economic, stakeholders and voluntariness dimensions. These dimensions are well synthesised by the Green Paper of EU Commission [8] where Corporate Social Responsibility is referred to actions undertaken by the company to cope with environmental and social issues beyond regulatory requirements and implying the interaction with stakeholders (employees, customers, community). Therefore, in CSR the responsibility categories overlap and intertwine with the more general issues of sustainable development: firms undertaking CSR actions are involved in a global sustainable development pattern, where sustainability includes economic, social and environmental aspects, according to the so-called Triple Bottom Line approach (TBL) or Three P model (Planet, People and Profit) proposed by Elkington [9].

The overlapping of CSR and sustainability issues is particularly relevant in the agri-food sector. As underlined by several studies [10–13], many motivations make CSR actions relevant for the food sector. First, the production process is closely linked to the use of natural resources, mainly land, water and energy, and therefore firms' choices have a direct impact on the environment. Secondly, over the last decades many scandals have taken place that highlighted health risks related to food production and caused consumers to ask for more information on production methods. Moreover, consumer preferences are evolving towards more environmentally and socially responsible products, and consumers are more and more interested in ethical and social food attributes.

Therefore, Corporate Social Responsibility in the agri-food sector involves many fields of action and, hence, has received attention by scholars of different disciplines and approaches. Maloni and Brown [10] identified eight categories of CSR; some of them are common to all industries, others are specific for the food supply chain: biotechnology, animal welfare, labour and human rights, health and safety, community, environment, fair trade and procurement. These issues have been analysed by different points of views that mainly focused on: i) the integration of CSR into the firm's business strategy or the food supply chain [14–16]; ii) consumers' perception of CSR [17–20] and iii) the relationship between CSR and firm's performance or more generally value creation in the supply chain [13,21–24].

The present work aims at giving further insight into the relationship between CSR and a firm's economic performance in the agri-food sector. It wants to illustrate a conceptual framework of this

relationship and represents a preliminary work aimed at understanding and testing some main link. In particular, the work wants to investigate the following research questions:

- 1) Does a relationship between CSR strategies of agri-food firms and their economic and financial performance exist?
- 2) Do CRS actions directly affect a firm's performance, or some variables play a mediating role?

The paper is structured as follows. section 2 focus on the link between CSR and financial performance and presents a conceptual scheme of this relationship. Section 3 describes data and methods used to analyse the main CSR-performance association. In section 4, the results of data analysis are presented and section 5 summarizes the main findings and conclusions.

## **2. CSR and economic performance**

The focus of scholars on CSR issues varies according to their theoretical approach and the relevance given to specific aspects of the relationship between business and society. Garriga et al. [25] tried to classify the large number of studies on CSR and identified four groups of CSR theories by the relevance of the economic, political, social and ethical dimensions. Based on these dimensions they define instrumental, political, integrative, and ethical theories: instrumental theories assume that firm's only mission is wealth creation; political theories focus on the power of corporations and its use in society; integrative theories look at the way business can satisfy social demands; ethical theories analyse ethical responsibilities that relate corporations to society.

Limiting to the economic dimension of CSR, within the instrumental approach many theoretical and empirical studies investigated the direct and indirect links between CSR actions and a firm's performance. CSR is considered as part of a business strategy aimed at increasing revenues and profits in different ways: reducing costs and increasing factors productivity, reaching new markets, enforcing customer's relationship, creating a firm's reputation [13]. This view is rather controversial. Some studies recall that the only "social responsibility of business is to increase its profits" [26] and associate to CSR practices higher costs and competitive disadvantages. Moreover, the use of corporate resources to finance social or environmental goals reduces shareholders' benefits and represents an "agency loss" [27]. On the contrary, a larger number of empirical studies show a positive relation between CSR and CFP. These studies assume two different models that link CSR and CFP [28]. According to the first model, CSR practices are treated as a resource that can increase benefits or reduce costs, e.g. a better relationship with employees could improve their effort and decrease absenteeism, the use of recycled inputs and the reduction of wastes could reduce costs. At the same time, the adoption of environment-friendly methods or a better relationship with no-profit organizations could allow access to new markets. In the second model the focus is not on the substantive impact of CSR but on its appeal. What is relevant is the image of the firm as a company involved in "doing good". This appeal will act as a differentiation factor and will generate a higher demand for its products or stocks and higher consumers' willingness to pay [28].

The link between CSR and performance can also be indirect and several variables, both internal and external to the firm, can play a role of mediators of the CSR-CFP relationship. Perrini et al. [29], by systematizing several previous studies, illustrated a comprehensive framework of the relationship

between CSR practices and performance drivers and outcomes. Following a stakeholder theory approach, Perrini et al. [29] distinguished CSR practices by the field or the category of stakeholder they affect and identified which factors they act on that finally reflect on cost or revenue related outcomes. As an example, CSR efforts acting on customers influence trust, reputation, and satisfaction; the integration of CSR criteria into vendors selection and the involvement of operators of the supply chain have effects on quality, trust and innovation; dialogue with society and the involvement in the community development determine organizational change and innovation; CSR efforts aimed at preventing environmental impacts imply innovation, reliability, and reputation.

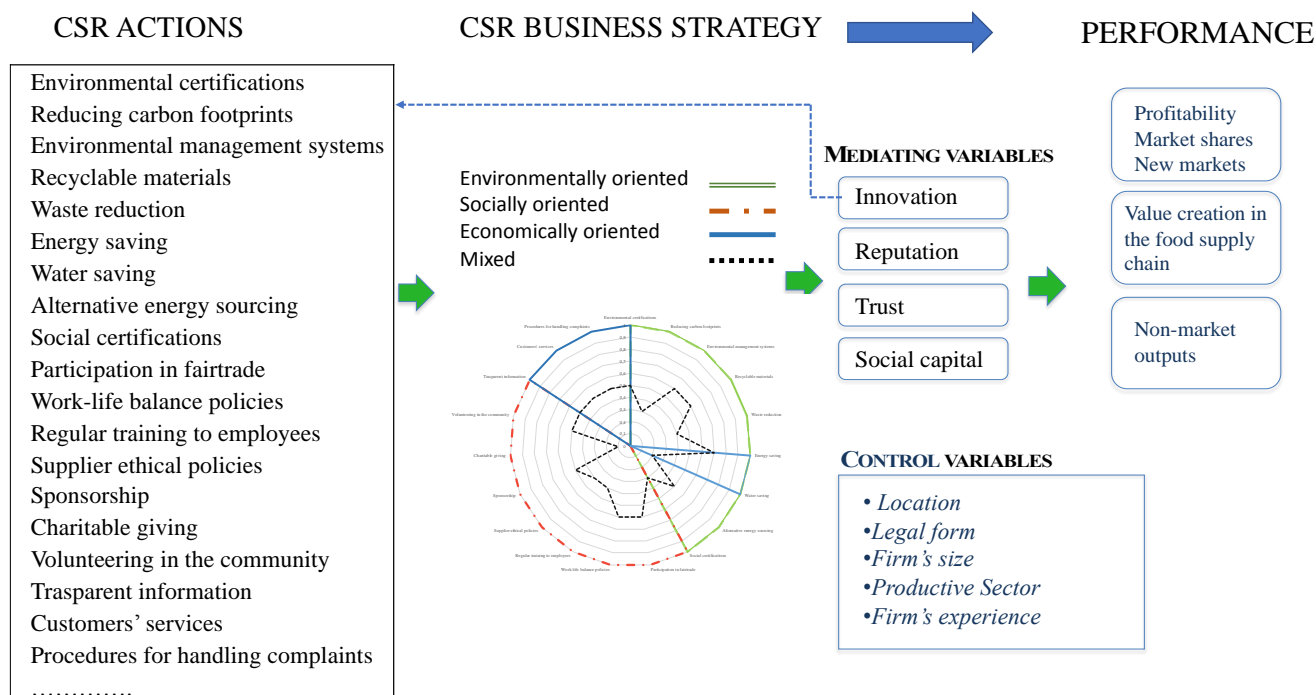
Thus, quality, reputation, trust, innovation, and social capital represent mediating forces linking CSR actions to a firm's performance. As a fact, CSR practices require a better internal organization, the employees' involvement, and make managers develop higher competencies and skills that in turn reflect in better firm's results. On the other side, CSR disclosure helps to build the firm's reputation that reflects in better market results [30]. Some authors proved that CSR measures focusing on environmental protection contribute to the adoption of innovation and the creation of new business models, new products, new market opportunities [31]. A positive correlation between innovation and CSR is stated by McWilliams and Siegel [32], who argue that CSR strategies promote investments in R&D and therefore can create either process or product innovations. Sharma and Vredenburg [33] relate a firm's proactive environmental behaviour to the development of organizational capabilities that in turn influence the ability to innovate.

Following Perrini et al. [29], two aspects can be underlined. Firstly, CSR involves several fields of analysis and actions that are intertwined in defining some intangible resources such as reputation, trust, firm's reliability. As a consequence, to catch the relationship between CSR and CFP, a CSR measure should be able to reflect the firm's strategy as a whole and synthesise the link between CSR and the intangible drivers of performance. Secondly, to understand the CSR-CFP relationship, the analysis of the direct link might not be enough and further research should aim to explain both the way CSR practices generate intangible driver factors and how these drivers act on economic and financial outcomes [29]. This analysis is the most theoretically relevant, but also the most complex, challenging work.

Figure 1 illustrates the conceptual scheme we are assuming. CSR actions can be referred to economic, social and environment components and can interest different stakeholders. The specific combination of CSR actions defines the business CSR strategy that directly reflects on the firm's performance. Besides that, there is a role of mediating driving factors that link CSR and CFP: quality, innovation, trust, reputation, social capital are influenced by the CSR strategy and act on the firm's performance. Moreover, a set of control variables can be deemed to affect the weight and the sign of the links. We could expect that the location of the firm [34,35], the legal status [36], the size [37,38], the experience [39] and the specific productive sector [13,40,41] can act in this sense.

As far as economic and financial performance is concerned, in previous works it has mainly been assessed employing accounting-based measures of financial returns, such as return on assets and return on equity or market (stock) return. As a fact these indicators are partial, can be dependent on conjunctural factors, and don't consider whether the business strategy is proactive or rather reactive, which is responding to external pressures. Sometimes, CSR strategy may aim at broadening the firm's market, catching new market segments, or just keeping the current market share, and therefore a

performance indicator should be able to assess the results in these fields. Moreover, a more comprehensive view of CSR effects underlines how CSR actions influence the value creation in the food supply chain as a whole and produce non-market outputs [13] that can contribute to increasing the firm's value as well as to determine public benefits.



**Figure 1.** A conceptual scheme of CSR actions – firm's performance relationship

The present work aims at analysing these links. It represents a preliminary and descriptive study as it concerns a small sample of agri-food firms and investigates only one of the driving forces, that is innovation. Further insight will be necessary to identify the whole set of mediator factors, as well as to test the direction of the relationship [42].

### 3. Material and methods

Data collection was carried out in two steps. First, a list of Italian agri-food firms operating in the dairy and fruit and vegetable industries has been extracted from the database AIDA of Bureau van Dijk that includes detailed information on Italian companies, such as financial data, legal entity details, and corporate structures (Data were extracted with reference to the codes NACE codes 1032, 1039 and 1051 which refer to activities of processing and handling vegetables and fruit and milk). Besides general information such as the address, telephone number, localization, legal form, firm's age, number of employees, extracted data included profitability and financial indicators, assets and liabilities, revenues, and costs. Data refer to the last available balance sheets (years 2018 or 2019).

Starting from this firms' list, companies were reached by phone and were asked to fill a questionnaire that was sent by mail. The questionnaire was distinguished in three sections:

- CSR actions undertaken by the firm and their relevance in the business strategy;

- Innovations undertaken in the last three years;
- Main structural, production, and market characteristics of the firm.

As CSR measures are concerned, following Herrera-Madueño et al. [43], actions undertaken by the firm were grouped around four fields, that is environment, employees, society, and customers. In the two sections, sustainability view and CSR actions, items were measured on a five-point Likert scale, with points going from 1=Totally disagree to 5=Totally agree.

Almost 300 firms have been reached by phone but only 40 questionnaires have been filled. Given the small sample, the present work represents a preliminary analysis and only has a descriptive nature mainly aimed at better defining the conceptual framework presented in Figure 1 and testing some of the main hypothesised links. Table 1 illustrates some descriptive statistics of respondents.

**Table 1.** Descriptive statistics of the sample.

		Number	%
Geographic area	Central and Northern Italy	23	57,5
	Southern Italy	17	42,5
Legal form	For-profit firms	28	70
	Co-operatives	12	30
Age	High (more than 20 years)	26	70
	Low (up to 20 years)	14	30
Product category	Processing and preserving of fruit and vegetables	32	80
	Milk processing and dairy products	8	20
Employees	0–9	9	22,5
	10–49	17	42,5
	50 and more	14	35,0

Data analysis is divided into two parts: i) through multivariate techniques we analysed data on CSR actions to identify the firm CSR strategies; and (ii) using the correlation analysis and non-parametric tests we tested the link between CSR strategies and firm performance, both directly and through innovation variables. Moreover, the analysis of variance (ANOVA) was used to test whether differences of CSR strategies and performance indicators exist according to control variables with a categorical nature.

## 4. Results

### 4.1 The firms' CSR strategies

CSR strategies have been evaluated by asking firms to indicate whether they undertook a set of actions that can be referred to different fields/stakeholders [42,44]: environment, employees, customers and local community (Table 2). The internal consistency of answers related to the four fields was tested through Cronbach's statistics. The four subscales produced acceptable results ( $\alpha_{ENV} = 0.8622$ ;  $\alpha_{EMP} = 0.7227$ ;  $\alpha_{CUS} = 0.9430$ ;  $\alpha_{COM} = 0.8362$ ).

A first aspect to be underlined is the homogeneous behaviour of firms towards customers. Ninety percent or more of respondents declare they usually adopt measures to avoid customers' complaints, answer their needs, and properly inform consumers (The frequency of adoption of CSR measures in

the four fields of analysis was measured by distinguishing the answers of firms who stated they strongly agree or agree to the specific item (category= Yes) from those who do not (category = No). That is strongly related to the evolution that characterized food demand and the closer attention the consumers pay to food quality and security. Then, the attention of firms towards customers' needs seems to be the necessary consequent strategy to stay on the market, more than a choice that reflects a proactive behaviour towards the firm's CSR development.

As far as environmental actions are concerned, only 50% of interviewed voluntarily exceed environmental regulations and periodically perform internal audits. A higher share of firms (about 80%) is involved in actions that concern energy saving and the use of alternative sources of energy. Therefore, closer attention to the environment seems to be related to actions that directly influence production costs. Nevertheless, it should be noted that this type of action is associated with environmental (corr = 0.3330, Sig. = 0.05) and social (corr = 0.341, Sig. = 0.05) certifications, then could also be linked to the business image and marketing strategies.

**Table 2.** List of CSR actions by field of interest.

ACTIONS FOCUSED ON THE ENVIRONMENT	We minimized the environmental impact of our activities We designed products and packaging to be reused or recycled We voluntarily exceed environmental regulations We periodically perform environmental audits We use recycled inputs We introduced alternative sources of energy We adopted measures to reduce water consumption We invested in energy-saving measures We adopted measures to internally produce energy
ACTIONS FOCUSED ON EMPLOYEES	We take the employees' interests into account for decision-making We help employees to achieve work-life balance We understand the relevance of stable employment for the workers and society as a whole We regularly develop training programs We regularly assess the employees' work and work environment
ACTIONS FOCUSED ON LOCAL COMMUNITY NEEDS	We integrate the local community's interests in the firm's decision-making process We support sport or cultural local activities We keep a transparent relationship with local authorities The firm feels to be part of the local community and worries about its development We supported programs for disabled people We are committed in local job creation
ACTIONS FOCUSED ON CUSTOMERS' NEEDS	We meet the customer's quality and price needs We inform customers about the appropriate use of products and their potential risks We adopt measures to avoid customers' complaints We give answers to customers' complaints and needs We give high value to transparent communication and information

Besides the relevance given to stable job relationships, in the field of relationship with employees most common actions refer to training programs and the assessment of work and workplace (80% or more of firms). On the contrary, less than 50% of firms is involved in actions to help employees to

balance work-life time and 67% state to take into account the interests of employees in the firm's decision-making.

The social side of CSR mostly concerns the relationship with the local community. In this field firms mainly focus on keeping a transparent relationship with the local public authority (77% of firms) or supporting sport and cultural activities (61%), while 41% of interviewed take into account the interests of local community in their decision making and 54% support programs for disabled people.

Looking at the co-operatives and for-profit firms' behaviour, the only difference concerns the higher frequency of co-operatives that regularly perform environmental audits and take into account the employees' interest in their decision-making. No statistically significant difference exists between firm typologies regarding the other CSR actions.

**Table 3.** PCA on CSR actions - Factor loadings matrix.

ACTIONS	Component				
	1	2	3	4	5
We adopt measures to avoid customers' complaints	<b>0.911</b>	0.108	-0.016	0.093	0.179
We give answers to customers' complaints and needs	<b>0.898</b>	0.132	-0.022	0.149	0.147
We inform customers on the appropriate use of products and their potential risks	<b>0.893</b>	0.235	0.121	-0.059	0.055
We give high value to transparent communication and information	<b>0.848</b>	0.238	0.198	0.049	0.171
We meet the customer's quality and price needs	<b>0.825</b>	0.132	0.162	0.212	0.005
We supported programs for disabled people	0.006	<b>0.817</b>	-0.022	0.359	0.148
The firm feels to be part of the local community and worries about its development	0.326	<b>0.738</b>	-0.127	0.198	0.131
We support sport or cultural local activities	0.351	<b>0.730</b>	0.091	0.013	0.237
We integrate the local community interests in firm's decision-making process	0.149	<b>0.660</b>	0.324	-0.089	-0.274
We help employees to achieve work-life balance	0.076	<b>0.619</b>	0.251	0.022	-0.053
We regularly assess the employees' work and work environment	0.208	<b>0.576</b>	0.143	0.421	0.071
We adopted measures to internally produce energy	-0.113	-0.006	<b>0.888</b>	0.154	0.123
We voluntarily exceed environmental regulations	0.154	0.079	<b>0.854</b>	0.099	0.095
We adopted measures to reduce water consumption	0.118	0.172	<b>0.708</b>	-0.103	0.537
We periodically perform environmental audits	0.212	0.131	<b>0.616</b>	0.522	0.195
We minimized the environmental impact of our activities	0.156	0.364	<b>0.593</b>	0.218	0.027
We understand the relevance of a stable employment for the workers and society	0.156	0.084	0.131	<b>0.863</b>	0.220
We regularly develop training programs	0.064	0.313	0.209	<b>0.744</b>	-0.127
We introduced alternative sources of energy	0.212	0.048	0.101	-0.055	<b>0.895</b>
We invested in energy saving measures	0.136	-0.019	0.293	0.298	<b>0.708</b>
We use recycled inputs	0.222	0.307	0.416	0.166	<b>0.429</b>
Explained variance	36.39	13.99	10.88	6.8	6.19

Note: KMO = .718; Bartlett test: chi-square = 593.3 Sig. = .000

Varimax Rotation method

A synthetic view of the firm's CSR actions can be obtained by carrying out an explorative PCA. Table 3 illustrates the factor loadings that help to understand the meaning of each component. PCA extracted 5 components that explain 74% of the variance. They can roughly be identified as: actions focused on customers' needs; actions focused on community and social needs, which merge the attention to the local community with measures related to social needs of employees; actions focused



on environmental protection; actions focused on the employee-firm relationship; actions focused on resources saving. It should be underlined that most of the variance is explained by the first three categories of actions, while the last two components account for a very small weight (Table 3). Two main results of this PCA should be underlined. First, following the framework of previous studies [42,44], we expected four components, one for each field/stakeholder category. On the contrary, in the empirical analysis, two components were extracted that refer to the environment field and their meaning suggests that CSR environmental actions should be better specified with reference to motivations that drive firm behaviour, that is a real concern for the environment, on one side, or economic objectives and cost reduction aims, on the other side. Secondly, the social involvement characterizes the firm's behaviour as a whole, with no distinction according to the stakeholder category (community or employees). Measures focused on employees represent a different group of actions when they deal with the firm-employee relationships (training and attention to stable job link) and therefore could be better related to the firm's organization and labour productivity objectives.

**Table 4.** Cluster results: mean values of components by group.

	Group 1	Group 2	Group 3
Actions focused on customers' needs	0.450	-0.796	0.537
Actions focused on community and social needs	0.007	0.146	-0.289
Actions focused on environmental protection	0.738	0.012	-1.591
Actions focused on employees	0.343	-0.156	-0.436
Actions focused on resources' use reduction	0.355	-0.716	0.589
Number of firms	17	15	8

The specific firm's strategy is defined by the set of CSR categories the firm carries out. Using a hierarchical cluster analysis, we identified 3 groups of firms characterized by different behaviour concerning the CSR actions synthesised by the extracted components. Cluster results (Table 4) and ANOVA (Table 5) show that:

- The groups mainly differ as actions focused on customers' needs, environmental protection, and resources' use reduction are concerned. On the contrary, CSR actions related to the social field and actions focused on the employees-firm relationship are very largely distributed in each group without any statistically significant difference among them.

- Group 1 is mainly characterized by the relevance of measures aimed at environmental protection and share with group 3 the attention to customers' needs. The main difference between group 1 and 3 concerns the type of environmental measures they implemented: more focused on environmental protection in group 1, while resources' saving is more relevant in group 3. Moreover, group 3 shows a lower involvement in actions oriented to community and social needs. Group 2 has very different behaviour and is less oriented to CSR actions.

**Table 5.** ANOVA results on components by groups.

	Mean square	F	Sig.
Actions focused on customers' needs	7.629	11.89	0.000
Actions focused on community and social needs	0.495	0.482	0.621
Actions focused on environmental protection	14.753	57.494	0.000
Actions focused on employees	1.943	2.048	0.143
Actions focused on resources' use reduction	6.306	8.842	0.001

#### 4.2 The firm's innovation behaviour

Almost all sampled firms introduced some innovation categories over the last three years. Table 6 gives an overall view of the frequency of different types of innovations. As far as process innovations are concerned, the improvement of production or distribution processes is the most widespread (90% of the sample), while less frequent is the introduction of new processes aimed at reducing costs (68% of the sample) or at adopting production standards (58%). A large share of firms introduced new products (78%). Organizational innovations are quite frequent except for those that imply the development of new alliances and networks (40%).

**Table 6.** Innovation frequency by category.

Innovation categories	No	Yes
We introduced new products or services	23%	78%
We introduced changes in the product design/packaging	35%	65%
We introduced new processes to favour the penetration in new markets	35%	65%
We introduced new processes aimed at reducing production costs	33%	68%
We improved our production or distribution processes	10%	90%
We introduced production standards and social and environmental management systems	43%	58%
We improved information and communication technologies	30%	70%
We introduced some change in labour's organization	28%	73%
We developed new alliances or networks	60%	40%

The adoption of innovations is a multiplier process: in most cases the introduction of product innovations requires a change in the firm organization or processes, and process innovations require a change in the organization and so on. That is highlighted by the correlation indexes among innovation categories. The introduction of new products is associated with the introduction of new processes to favour the penetration in different markets (corr= 0.483, Sig. = 0.002), but also to the development of alliances and networks (corr= 0.318, Sig. = 0.046). The penetration in new markets is related to new information and communication technologies (corr= 0.663, Sig. = 0.000) and to the introduction of production standards and environmental and social management systems (corr= 0.323; Sig. = 0.042). New processes aimed at reducing production costs are correlated to change in labour's organization (corr= 0.529, Sig. = 0.000) and the introduction of production standards (corr= 0.483, Sig. = 0.002).

The correlation between CSR actions and the adoption of innovations can help to better investigate whether there is a link between these two fields. Table 7 shows that this link is generally very weak

and, in particular: i) there is no link between product innovations and any of CSR actions; ii) resources' use reduction doesn't imply the introduction of some process innovation.

Nevertheless, some interesting relationship emerges:

- actions focused on customer's needs are positively correlated to the introduction of new processes aimed at reaching new markets, to a change in the labour's organization and the ICT improvement;

- actions aimed at environmental protection are only related to ICT improvement. That highlights the role of communication in environmental strategies;

- actions focused on employees are positively correlated to the introduction of new production and distribution processes and production standards. That mainly underlines the role of labour training in implementing some process change.

**Table 7.** Correlation indexes between innovation categories and CSR actions

	Actions focused on:				
	Customers' needs	Community and social needs	Environmental protection	Employees	Resources' use reduction
We introduced new products or services	0.158	0.026	0.105	-0.167	0.198
We introduced changes in the product design/packaging	0.008	0.152	0.265	-0.058	-0.081
We introduced new processes to favour the penetration in new markets	0.331*	0.362*	0.163	0.216	0.058
We improved our production or distribution processes	0.152	-0.021	0.054	.314*	0.111
We introduced some change in labour's organization	0.338*	0.071	0.059	-0.037	0.105
We introduced production standards and social and environmental management systems	0.126	0.262	0.275	0.382*	-0.019
We introduced new processes aimed at reducing production costs	0.087	0.112	0.205	0.147	0.191
We developed new alliances or networks	0.308	0.162	0.185	-0.243	0.062
We improved information and communication technologies	0.357*	0.254	0.444**	-0.068	-0.083

Note : \* = Sig. 0.05, \*\* = Sig. 0.01

### 4.3 *The economic and financial performance*

Previous studies measured financial performance using indicators that referred to stock price increase or accounting return indicators [24,28,45,46]. In this work four accounting measures were employed, that is Return on Assets (ROA), Return on Investment (ROI), Return on Equity (ROE), and Return on Sales (ROS), and average values in the last three years were considered. The growth of turnover over the last 3 years was also considered, to take into account of CSR actions as part of a wider market strategy.

As far as the direct link CSR-performance is concerned, only some links emerged. In particular, the Kruskal-Wallis non-parametric test on financial indicators showed that ROE and ROA distributions are statistically different by groups of firms following different CSR strategies (Table 8). Moreover, pairwise comparison (Table 9) proved that a statistically significant difference exists between group 2 and the others. In particular, group 2 was characterized by a lower involvement in CSR practices and proved to have lower levels of both ROE and ROA values.

**Table 8.** Mean values of performance indicators and Kruskal-Wallis test on groups based on CSR actions.

Performance indicator	Mean value			Kruskal-Wallis Test	Sign.
	Group 1	Group 2	Group 3		
Revenue growth	15.6	14.9	26.3	0.501	0.778
ROS	3.5	1.5	4.5	4.748	0.093
ROI	7.6	3.9	5.4	4.116	0.128
ROE	18.4	1.1	14.9	9.214	0.010
ROA	4.5	-0.4	6.5	9.195	0.010

**Table 9.** Pairwise comparison of ROE and ROA by groups based on CSR actions.

	Kruskal-Wallis Test	Std error	Sign.
ROE			
Group 2- Group 1	11.275	4.114	0.006
Group 2- Group 3	-12.080	5.052	0.017
Group 1- Group 3	-0.805	4.887	0.869
ROA			
Group 2- Group 1	9.333	4.141	0.024
Group 2- Group 3	-14.333	5.118	0.005
Group 1- Group 3	-5.000	5.012	0.318

As far as the link innovation-performance is concerned, no statistically significant relationship emerged. Therefore, while an association between some categories of innovation and CSR actions is proved, we can't verify the role of innovation in the CSR-performance relationship. This result is unexpected but can depend on many factors: how innovation has been measured (whether or not a firm has adopted a specific innovation category), innovation typologies taken into account, and their disaggregation, the time lag that should be considered between the adoption of innovations and the economic outcomes, the financial indicators employed and so on.

To verify how control variables influence a firm's performance, t-test and ANOVA were performed on components' scores for groups distinguished by firms' location, size classes, legal form and age classes (Table 10). Significant differences at an alfa level of 0.05 only emerged in ROE and ROA values when the firm's size is considered, and in ROE when the firm's experience is considered. This result underlines the need to control for structural factors to better understand the CSR-performance relationship.

**Table 10.** Mean values of performance indicators and t-test and ANOVA on groups based on control variables

<i>Legal form</i>					
	<i>Co-operative</i>	<i>For profit firms</i>		<i>t-test</i>	<i>Sign.</i>
ROE	13.5	10.6		-0.325	0.750
ROA	1.5	3.7		0.930	0.358
<i>Location</i>					
	<i>Central-Northern Italy</i>	<i>South Italy</i>		<i>t-test</i>	<i>Sign.</i>
ROE	11.2	11.8		-0.87	0.931
ROA	1.8	4.7		-1.411	0.166
<i>Age class</i>					
	<i>Up to 20 years</i>	<i>More than 20 years</i>		<i>t-test</i>	<i>Sign.</i>
ROE	22.8	5.8		2.210	0.043
ROA	2.1	3.5		-0.636	0.529
<i>Size class</i>					
	<i>Up to 9 employees</i>	<i>10-49 employees</i>	<i>50 employees and more</i>	<i>F</i>	<i>Sign.</i>
ROE	5.1	20.3	4.4	3.381	0.045
ROA	-0.8	6.0	1.8	3.968	0.027

## 5. Discussion and conclusion

This work illustrates a conceptual framework of the relationships between CSR and firm profitability in the agri-food sector. In particular, we underlined the relevance of some intangible factors (innovation, reputation, trust, social capital) that may have a mediating role between CSR strategies and the firm's economic and financial performance and presented a preliminary empirical analysis aimed at verifying the direct CSR-performance association, as well as the CSR-innovation-performance link.

The connection CSR-performance has been investigated by several previous works but results of researches on this issue were rather controversial [28,30,47,48]. Most of them resulted in non-significant association and, when the effect of CSR on performance proved to be positive, it was generally small [28].

In our work there is an evidence that firms with lower CSR orientation have also lower profitability levels, but that should be controlled with respect to some structural factors, and therefore results can't be conclusive on this matter.

As far as the CSR-innovation-performance link is concerned, results highlighted the association between the adoption of specific innovations and some CSR patterns, e.g. a positive correlation exists between actions focused on customer's needs and process innovation, and between actions focused on employees and the introduction of production standards. Moreover, innovation in the ICT field is strongly related to CSR environmental practices, and that underlines the firm's need to communicate environmental CSR actions to build its reputation. On the contrary, the connection innovation-performance was not statistically proved.

Several factors influence the results. First of all, the small size of the sample and the related low data variability do not allow a conclusive analysis; secondly, there are problems related to innovation

and firm's performance measures; lastly, the time lag between the adoption of innovations and the economic outcomes should be more carefully considered.

Nevertheless, this preliminary analysis provides some suggestions that can help in the following work.

First of all, in defining CSR actions, the four areas of CSR suggested by the stakeholder theory should be better specified. Our work highlighted that it is worthless to distinguish firm's social orientation according to social community and employees' areas, while some actions involving the employees-firm relationship mainly relate to economic objectives. They could represent a different field of CSR actions or it should be questioned whether they are part of a CSR strategy. Moreover, actions dealing with environment can reflect different firm's CSR orientation and strategy and then should be better distinguished. As a fact, the environmental commitment can assume different meanings according to the motivations that push it and the effects it has in terms of economic impact. Thus, to better understand firms' CSR orientation and strategies, CSR actions should be further specified.

Secondly, the analysis highlighted a relationship between CSR actions and process and organization innovations while no link has been found with respect to product innovations. Further analysis is needed to identify which innovations are relevant in CSR strategies and to test the direction of the CSR-innovation relationship.

Thirdly, findings only partially support the relationship between CSR and firm's financial performance. This finding is common to previous studies and suggests that company's accounting indexes might not be fully adequate to study the effects of CSR. As a fact, CSR actions affect the value creation of the food chain, that is related to market and non-market outputs [13,49]. The market effects could represent only one aspect of CSR results. Moreover, as far as firm is concerned CSR actions could produce effects in terms of keeping market shares or reaching new markets or could be the condition to stand in the market. In these cases, profitability indicators can't catch the economic consequences of firms' CSR strategies.

In summary, this study provides some new findings with respect to CSR fields and the link CSR-performance.

The classification of CSR actions according to stakeholders' approach is not useful when the focus of the analysis is on CSR in a sustainable development framework. Results show that some of CSR actions related to employees enter in the broader field of the corporate social responsibility, while others are more functional to firm's organization and management choices. These last ones should not be considered as component of the CSR strategy. As environmental actions are concerned, empirical results underline the need to distinguish them according to firm's objectives and CSR motivations (cost reduction rather than environmental protection). These findings are relevant because they highlight the need to analyse CSR actions within the frame of firm strategies.

With respect to the link CSR-innovation-performance the empirical results confirm a correlation between some CSR actions and process and organizational innovations, while no relationship has been proved between innovation and financial performance. That is relevant because it underlines the role of some innovation typologies in the implementation of CSR strategies, independently of a link to financial performance. Therefore, undertaking a CSR strategy implies changes in the process

management and firm's organization to satisfy environmental and social goals of the new business model. In such a case, CSR strategies, not innovations, affect firm's performance.

### Conflict of interest

All authors declare no conflicts of interest in this paper.

### References

1. Jenkins H (2009) A business opportunity model of corporate social responsibility for small-and medium-sized enterprises. *Business Ethics: A Eur Rev* 18: 21–36.
2. Vogel D (2006) *The market for virtue. The potential and limits of Corporate Social Responsibility*, Washington D.C: Brooking Institution Press.
3. Van Marrewijk M (2003) Concepts and Definitions of CSR and Corporate Sustainability: Between Agency and Communion. *J Bus Ethics* 44: 95–105.
4. Dahlsrud A (2008) How Corporate Social Responsibility is Defined: an Analysis of 37 Definitions. *Corp Soc Responsib Environ Manag* 15: 1–13.
5. Heyder M, Theuvsen L (2009) Corporate Social Responsibility in Agribusiness: Empirical Findings from Germany. Paper presented at the 113th EAAE Seminar *A resilient European food industry and food chain in a challenging world*, Chania, Crete, Greece, September 3–6.
6. Carroll AB (1979) A three-dimensional conceptual model of corporate performance. *Acad Manage Rev* 4: 497–505.
7. Carroll AB (1991) The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Bus Horiz* 34: 39–48.
8. Commission of the European Communities (2001) *Green Paper. Promoting a European Framework for Corporate Social Responsibility*, Doc/01/9, Brussels.
9. Elkington J (2004) Enter the Triple Bottom Line, in Henriques, A., Richardson, J. (Eds.). *The Triple Bottom Line: Does it All Add Up? Assessing the Sustainability of Business and CSR*. London: Earthscan Publications 1–16.
10. Maloni M J, Brown M E (2006) Corporate social responsibility in the supply chain: an application in the food industry. *J Bus Ethics* 68: 35–52.
11. Hartmann M (2011) Corporate social responsibility in the food sector. *Eur Rev Agric Econ* 38: 297–324.
12. Manning L (2013) Corporate and consumer social responsibility in the food supply chain. *Brit Food J* 115: 9–29.
13. Nazzaro C, Stanco M, Marotta G (2020) The Life Cycle of Corporate Social Responsibility in Agri-Food: Value Creation Models. *Sustainability* 12: 1287.
14. Briamonte L, Hinna L (2008) *La responsabilità sociale delle imprese del sistema agroalimentare*. Studi e Ricerche INEA, Roma: Edizioni Scientifiche Italiane.
15. Ross RB, Pandey V, Ross KL (2015) Sustainability and strategy in U.S. agri-food firms: An assessment of current practices. *Int Food Agribusiness Manag Rev* 18: 17–48.
16. Liapakis A, Costopoulou C, Tsiligiridis T, et al. (2017) Studying Corporate Social Responsibility Activities in the Agri-Food Sector: The Greek Case. *Int J Agric Environ Inf Syst* 8: 1–13.

17. Lagerkvist CJ, Hess S (2011) A meta-analysis of consumer willingness to pay for farm animal welfare. *Eur Rev Agric Econ* 38: 55–78.
18. Pino G, Amatulli C, De Angelis, et al. (2016) The influence of corporate social responsibility on consumers' attitudes and intentions toward genetically modified foods: evidence from Italy. *J Clean Prod* 112: 2861–2869.
19. Lerro M, Raimondo M, Freda R (2016) Determinants of corporate social responsibility support: A consumers' perspective. *Quality - Access to Success* 1: 172–180.
20. Morgan CJ, Olynk Widmar NJ, Wilcox MD, et al. (2018) Perceptions of Agriculture and Food Corporate Social Responsibility. *J Food Prod Mark* 24: 146–162.
21. Aragón-Correa JA, Hurtado-Torres N, Sharma S. et al. (2008) Environmental Strategy and Performance in Small Firms: A Resource-Based Perspective. *J Environ Manage* 86: 88–103.
22. Marotta G, Nazzaro C (2012) Responsabilità sociale e creazione di valore nell'impresa agroalimentare: nuove frontiere di ricerca. *Economia Agro-Alimentare* 14: 13–54.
23. Temri L, Giordano G, Kessari ME (2014) Innovation et responsabilité sociale des entreprises (RSE) dans les entreprises agroalimentaires du Languedoc-Roussillon: le rôle de la performance économique. *Innov* 46: 115–139.
24. Fu YJ, Shen JQ (2015) Correlation Analysis between Corporate Social Responsibility and Financial Performance of Chinese Food-processing Enterprises. *Adv J Food Sci Technol* 7: 850–856.
25. Garriga E, Melé D (2004) Corporate Social Responsibility Theories: Mapping the Territory. *J Bus Ethics* 53: 51–71.
26. Friedman M (1970) The social responsibility of business is to increase its profits. *New York Times Magazine* September 13.
27. Barnett ML (2007) Stakeholder influence capacity and the variability of financial returns to Corporate Social Responsibility. *Acad Manage Rev* 32: 794–816.
28. Margolis JD, Elfenbein HA, Walsh JP (2007) *Does It Pay to Be Good? A Meta-Analysis and Redirection of Research on the Relationship between Corporate Social and Financial Performance*. Working paper. Cambridge MA: Harvard Business School.
29. Perrini F, Russo A, Tencati A, et al. (2012) Deconstructing the Relationship Between Corporate Social and Financial Performance. *J Bus Ethics* 102: 59–76.
30. Orlitzky M, Schmidt FL, Rynes SL (2003) Corporate social and financial performance: a meta-analysis. *Organ Stud* 24: 403–441.
31. Battaglia M, Testa F, Bianchi L, et al. (2014) Corporate Social Responsibility and Competitiveness within SMEs of the Fashion Industry: Evidence from Italy and France. *Sustainability* 6: 872–893.
32. McWilliams A, Siegel D (2001) Corporate social responsibility: a theory of the firm perspective. *Acad Manage Rev* 26: 117–127.
33. Sharma S, Vredenburg H (1998) Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strateg Manag J* 19: 729–753.
34. Becchetti L, De Panizza A, Oropallo F (2007) Role of Industrial District Externalities in Export and Value-added Performance: Evidence from the Population of Italian Firms. *Reg Stud* 41: 601–621.



35. Aiello F, Pupo V, Ricotta F (2014) Explaining Total Factor Productivity at Firm Level in Italy: Does Location Matter? *Spat Econ Anal* 9: 51–70.
36. Amadiou P, Viviani JL (2010) Intangible Effort and Performance: The Case of the French Wine Industry. *Agribusiness* 26: 280–306.
37. Wu ML (2006) Corporate social performance, corporate financial performance, and firm size: a meta-analysis. *J Am Acad Bus* 8:163–171.
38. Younis H, Sundarakani B (2020) The impact of firm size, firm age and environmental management certification on the relationship between green supply chain practices and corporate performance. *Benchmarking: Intern J* 27: 319–346.
39. Lee YM, Hu JL (2010) Integrated Approaches for Business Sustainability: The Perspective of Corporate Social Responsibility. *Sustainability* 10: 2318.
40. Gonzales-Benito J, Gonzales-Benito Ó (2006) A Review of Determinant Factors of Environmental Proactivity. *Bus Strategy Environ* 15: 87–102.
41. Micheli G, Cagno E, Mustillo G, et al. (2020) Green supply chain management drivers, practices and performance: A comprehensive study on the moderators. *J Clean Prod* 259: 121024.
42. Martinez-Conesa I, Soto-Acosta P, Palacios-Manzano M (2017) Corporate social responsibility and its effect on innovation and firm performance: An empirical research in SMEs. *J Clean Prod* 142: 2374–2383.
43. Herrera Madueno J, Larrán Jorge M, Martínez Conesa I, et al. (2016) Relationship between corporate social responsibility and competitive performance in Spanish SMEs: Empirical evidence from a stakeholders' perspective. *BRQ Bus Res Q* 19: 55–72.
44. Buil-Carrasco I, Fraj-Andrés E, Matute-Vallejo J (2008) Corporate Environmentalism Strategy in the Spanish Consumer Product Sector: a Typology of Firms. *Bus Strat Env* 17: 350–368.
45. Blackburn VL, Doran M, Shrader CB (1994) Investigating the dimensions of social responsibility and the consequences for corporate financial performance. *J Manag Issues* 6: 195–212.
46. Aupperle KE, Carroll AB, Hatfield JD (1985) An empirical investigation of the relationship between corporate social responsibility and profitability. *Acad Manage J* 28: 446–463.
47. Ullmann AA (1985) Data in Search of a Theory: A Critical Examination of the Relationships among Social Performance, Social Disclosure, and Economic Performance of U. S. Firms. *Acad Manag Rev* 10: 540–557.
48. Wang Q, Dou J, Jia S (2016) A Meta-Analytic Review of Corporate Social Responsibility and Corporate Financial Performance: The Moderating Effect of Contextual Factors. *Bus Soc* 55: 1083–1121.
49. Coppola A, Ianuario S (2017) Environmental and social sustainability in Producer Organizations' strategies. *Brit Food J* 119: 1732–1747.



AIMS Press

© 2020 the Author(s), licensee AIMS Press. This is an open access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>)