

# **The influence of managerial satisfaction on corporate environmental performance and reputation**

## **Abstract**

Organisational studies have widely debated the relation between job satisfaction and job performance. Some papers have dealt with managerial satisfaction and businesses performance adopting agency theory to interpret the results. However, no studies have yet considered the relation between the satisfaction levels of an environmental manager and corporate environmental performance. This paper thus analyses the role played by the environmental manager's satisfaction in enhancing corporate environmental performance and reputation. The paper uses data from a survey of 412 EMAS registered organisation. The results show a positive relation between managerial satisfaction and environmental performance, whereas no such positive relation was found considering eco-innovation performance. In addition, the environmental manager's satisfaction has a positive and indirect influence on the corporate environmental reputation. These results contribute to the literature on agency theory and aim to extend the debate between job satisfaction and job performance to the sustainable business field.

**Keywords:** managerial satisfaction, environmental performance, Environmental Management Systems, eco-innovation, structural equation model.

## **1. Introduction**

The relation between satisfaction and business performance has been widely debated in management and organizational studies.

The theories on organisational psychology and business management have explored the motivational factors that determine higher satisfaction and performance (Chung, 1968), and studies on team motivation have affirmed that one of the drivers of effective outcomes is satisfaction (Hackman and Walton, 1986). One the used theory applied to interpret this relation is the upper-echelons theory. It supports the interplay among demographic features, cognitive values, and strategic preferences of a human (Hambrick & Mason, 1984; Wiersema & Bantel, 1992). These theorists also suggest that the organisational outcomes are manifestations of the values and preferences of their top management teams (Finkelstein and Hambrick, 1996; Hambrick et al., 1996). At the business level, papers have focused on the relationship between the satisfaction for the job and the performance of employees (Vroom, 1964, Schwab and Cummings, 1970; Fisher, 1980; Iaffaldano and Muchinsky, 1985; Judge et al., 2001). Many of these studies stated a positive interplay between the satisfaction for the job and job performance (Bakker and Oerlemans, 2011). For example, Yee et al. (2008) observed that a higher level of job satisfaction of an employee is positively linked with higher quality and profitability in the service industry. Similarly, Delmas and Pekovic (2013) found that job satisfaction and employee motivation positively affected their labor productivity. In the businesses studies, management scholars have read the findings in this field mainly through the lens of the agency theory. According to this theory, an agent (e.g. employee) is hired by one or more subjects,

called principal (e.g. employer), under a contract and is compensated by the principal to achieve his desired outcomes (Miles, 2012). This principal-agent relation will offer interesting indications also to interpret the results of our paper.

In a marginal way, some studies have focused on a specific category of employees i.e. on the relation between managerial satisfaction and business performance. For instance, by studying managers of an IT company, Ziegler et al. (2012) found that the satisfaction for the job can help to identify the effects on performance arising from the job. Similarly, Netemeyer et al. (2010) looked at managers' performance and satisfaction from a psychological rather than a management perspective. However, for what we know, there are not studies that have investigated the relation between managerial satisfaction and corporate environmental performance.

The aim of this paper is thus, first, to contribute to the literature on managerial satisfaction and performance, and second, to extend the literature discussion in this field including the environmental management perspective, i.e. considering the environmental manager satisfaction and the environmental performance of the organisation. To achieve this objective, we use a survey of a sample of Eco Management and Audit Scheme (EMAS) registered organisations. The paper is structured as follows: section 2 describes the theoretical framework, section 3 outlines our methodology and the sample we used, section 4 presents and discusses the results, finally Section 5 draws some conclusions.

## **2. Theoretical framework and hypotheses development**

### *2.1 Managerial satisfaction in companies with a certified Environmental Management System (EMS)*

To test our hypotheses we used the results of an EMAS Evaluation Study related to a sample of EMAS registered organisations. The consequences of EMAS registrations and more generally of Environmental Management Systems (EMSs), such as ISO14001, on corporate management have been extensively studied. The EMAS is considered one of the mainly certifiable EU tools (Testa et al. 2014, Merli et al. 2016), and in the past many scholars have studied its effects on corporate environmental management. Some studies have dealt with the effects of EMAS and EMSs on environmental performance (Ammenberg et al., 2002; Comoglio and Botta 2012; Daddi et al., 2011; Melnyk et al., 2013), while others mainly focused on the drivers behind their adoption (Morrow and Rondinelli, 2002; Heras-Saizarbitoria et al., 2016; Daddi et al., 2016) or on the spread of EMSs among SMEs (Ammenberg and Hjelm, 2003; Zorpas, 2010; Daddi and Iraldo, 2016). Recently some papers have studied the stagnation or decrease of EMAS registrations identifying several reasons such as the current economic crisis (Heras-Saizarbitoria et al., 2015; Daddi et al., 2017; Merli and Preziosi, 2018). Despite the high number of papers on EMAS and EMSs, no publications have dealt with the level of satisfaction of environmental managers from environmental certified companies.

Our first hypothesis (H1) is thus that external auditors are as one of the main "actors" that could influence the environmental managers satisfaction, which in the case of EMAS registration are called 'environmental verifiers'. The environmental audit is the last step in the yearly plan-do-check-act cycle applied to enterprises having a certified environmental management system. The auditor (or a team of auditors) assesses the work carried out by the environmental manager and his/her audit report should help to increase the environmental management at firm level (Heras-Saizarbitoria et al., 2013; Testa et al., 2017) and, in our opinion, could also contribute to the overall satisfaction of environmental managers. The literature on the relation between auditors/verifiers and certified companies is not particularly wide and mainly focuses on specific topics such as auditor independence (Dogui et al. 2014) or the auditor's interpretation of the standard's requirements (Ammenberg et al., 2001). The first hypothesis represents a

contribution to the existing theoretical framework by considering the relation between the environmental verifier and the managers' satisfaction:

**Hypothesis 1:** *The higher the knowledge of environmental verifiers, the higher the satisfaction of the environmental manager will be.*

In addition, this first hypothesis is also coherent with agency theory. According to the principal-agent model, job performance should have a positive effect on job satisfaction (Brown and Peterson, 1994). Verifiers are particularly linked with performance, their role is to evaluate the firm environmental performance to release or confirm the environmental certification.

In addition we should highlight that the relation supposed in the first hypothesis could result as positive in the case of a fully internalisation of the Environmental Management System i.e. in the companies apply the standard in an effective way avoiding symbolic behaviours (Testa et al., 2017).

## *2.2 Managerial satisfaction and corporate environmental performance: eco-innovation, environmental performance, environmental reputation*

Managerial satisfaction can be defined as “a key measure of individual managerial success” (Carree and Verheul, 2012). The concept of managerial satisfaction includes different levels of satisfaction that can be extrinsic or intrinsic. Extrinsic level deals with material characteristics of the work (including for example wage, job security or career opportunity), while the intrinsic one includes qualitative features of the job (such as the kind of the work and the relations). Managerial satisfaction may also be influenced by values and personality features, but also by a scarce aversion to risk (Cooper et al., 1988; Bradley and Roberts, 2004). In short, if people are more motivated or find satisfaction in doing their work, they will achieve a higher performance (Vroom, 1964; Strauss, 1968). The connection between extrinsic satisfaction is widely debated in the agency theory literature. In an agency theory context, incentives, bonuses, promotion designed to encourage extrinsic motivation are held to be indispensable (Osterloh et al., 2002). In addition, agency theory describes a possible problem that can occur in the agency relationship that can affect corporate performance. It is called “agency problem” and it deals with the potential for managers to misbehave if the interests of the company owners and the agent managers diverge (Dalton et al., 2007). If the principal and the agent both seek to maximise their own self-interests in this relationship, then the agent may not always act in the best interests of the principal (Jensen and Meckling, 1976). To minimize this problem that can negatively influence managerial satisfaction and corporate performance (including environmental performance) there are some ways such as: board independence (the main role of board is to monitor the behaviour of managers), agent equity ownership (managers share ownership of the company and thus help to advance shareholders interests) (Dalton et al., 2007). Whether managerial satisfaction can also affect environmental management issues, including the eco-innovation implementation is not clear. Some of the literature has explored the interplay between Environmental Management System and the green innovation of companies, highlighting positive and negative relations. Rennings et al. (2006) explored the effect of EMAS on economic performance and on technical green innovation in EMAS sites in Germany. Their survey was based on 1,277 companies and reported a whole positive effect of the EMS on process innovations including an environmental dimension. Grolleau et al. (2015) found that ISO 14001 certification promotes innovation and their findings highlighted the EMS's ability to stimulate environmental investments. Lim and Prakash (2014) reported a positive link between the number of ISO 14001 certificates and environmental patents at country level. In a

survey with German organisations, Frondel et al. (2008) found that innovation at environmental level were not linked with the adoption of an Environmental Management System.

As previously mentioned, most scientific studies have addressed the question of environmental management and innovation in general by covering EMAS as well as ISO 14001. Other studies have analysed the drivers of eco-innovation, identifying market pull, environmental regulation and cost savings as the main determinants (Cleff and Rennings, 1999, Triguero et al. 2013)

Although these studies investigated whether an EMS stimulated the adoption of eco-innovation, the existing literature has not paid attention to specific drivers of eco-innovation in certified organisations such as managerial satisfaction. The second hypothesis is thus:

**Hypothesis 2:** *The higher the level of satisfaction of the environmental manager , the higher the level of environmental eco-innovation adopted at the firm level.*

In addition to the relation between managerial satisfaction and eco-innovation adoption, our paper considers if the implementation of eco-innovation determines an increase of the environmental reputation of a company. In the literature, the effects of eco-innovation have been investigated mainly in relation to economic (Zahra and Das, 1993; Daddi et al. 2012; Aguilera-Caracuel and Ortiz-de-Mandojana, 2013; Tessitore et al. 2013) or environmental performance (Chiou et al., 2011; Carrión-Flores and Innes, 2010). However the relation between eco-innovation and reputation at environmental level has not been investigated.

Fombrun and Shanley (1990) highlighted how firms compete to obtain a higher reputational status, and they consider reputation in terms of results related to a competitive process in which companies distinguish their distinctive features with the aim to increase their social position (Spence, 1974; Fombrun and Shanley, 1990). In the field of environmental management, environmental reputation has been identified as being positively related to the environmental reporting activities of organisations (Dixon et. al., 2005) and as a leverage to obtaining specific benefits. For example, some studies have shown how environmentally certified firms are considered to have a higher reputation by public authorities which thus enables them to obtain regulatory (Wätzold et al., 2001; Daddi et al., 2014; Testa et al., 2016) and monetary incentives (Heras-Saizarbitoria, 2016). Although some papers have examined the consequences of the environmental reputation, few empirical investigations have sought to understand the factors that influence environmental reputation. Our third hypothesis is thus:

**Hypothesis 3:** *Eco-innovation performance is positively related with corporate environmental reputation.*

Since the publication of the first version of the EMAS Regulation in 1993, one of the scheme's main aims has been to stimulate environmental performance within registered organisations: the principle of continuous performance improvement is key to EMAS's efforts in this regard (Daddi et al., 2011). The increase in environmental performance is a key objective of EMAS and more generally of EMSs, several authors have confirmed this positive relation at the organisation (Daddi et al., 2011; Nishitani et al. 2012; Iwata et al. 2010) and the country levels (Potoski and Prakash 2013; Lim and Prakash, 2014; Daddi et al. 2015) while other authors highlight controversial results (Ammenberg, 2007; Zobel, 2016). Similarly to the previous hypothesis to eco-innovation, also in this case our objective is also to verify whether the positive influence of managerial satisfaction on environmental performance could affect an organisation's environmental reputation, thus:

**Hypothesis 4:** *The higher the environmental manager's satisfaction, the higher the level of environmental performance achieved by the organisation.*

**Hypothesis 5:** *Environmental performance is positively related with the corporate environmental reputation.*

Hypotheses 2-5 have the objective to investigate the influence of the environmental manager satisfaction in relation to different characteristics of the certified organisation such as eco-innovation, environmental performance and, using these variables as mediations, on the corporate environmental reputation. In the last hypothesis (H6), similarly to H1, we aim to explore the drivers of managerial satisfaction and whether the environmental reputation can be considered not only a cause of managerial satisfaction (H2-5) but also a determinant. The relation between job performance and job satisfaction has been discussed in previous management and organizational psychology studies. These researches have achieved contradictory results, some of them observed a weak relation (Iaffaldano and Muchinsky, 1985; Brown and Peterson, 1993) while other studies highlighted a positive effect (Christen et al., 2006). This last hypothesis is consistent with literature aiming to extend the discussion to the field of the relation between environmental performance and environmental manager satisfaction:

**Hypothesis 6:** *Corporate environmental reputation is positively related with the environmental manager satisfaction.*

To facilitate the understanding of the connections between the different hypotheses, Figure 1 summarizes the theoretical scheme and the six hypotheses.

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### **3. Research method**

#### *3.1 Data source and sample*

EMAS is re-evaluated at regular intervals. Based on these evaluations, the European Commission and EU Member States decide whether a revision of the scheme is necessary. The source of data used in this paper is the “EMAS Evaluation Study” which is the most recent evaluation of EMAS carried out by the EU Commission. The results were summarised in a report completed in 2015 (Weiss et al., 2015), but only published in June 2017 by the EU Commission within the framework of the initiative EMAS and Ecolabel Fitness Check (further details [here](http://ec.europa.eu/environment/emas/emas_publications/policy/fitness_check_en.htm)

[http://ec.europa.eu/environment/emas/emas\\_publications/policy/fitness\\_check\\_en.htm](http://ec.europa.eu/environment/emas/emas_publications/policy/fitness_check_en.htm)). The authors of this paper were part of the research team in charge to carry out the study.

During the study, an extensive online survey involved EMAS registered organisations in order to explore many EMAS features. A questionnaire was drafted, translated into Italian, German, Spanish, and English. It was sent for feedback to the Commission as well as to over 50 EMAS stakeholders and experts before being completed in its final form. Although nearly all the questions were multiple choice, comment boxes were also included to enable organisations to add information or details. Most questions used the 1-5 Likert scale, designed to reduce ambiguity in answers by providing respondents with a range of values to choose from. The project team obtained email contacts for all EMAS registered organisations from the EU EMAS

Register and several EMAS Competent Bodies. All EMAS registered organisations received emails from the project team containing links to the online survey, a PDF download and explaining the reasons behind the survey. EMAS Competent Bodies were also informed of the survey's distribution and asked to encourage organisations in their countries to take part. The survey was available e from 5 June - 29 June 2014. During this time period, an additional reminder was sent to the organisations. By request, several participants were granted extensions until 4 July 2014, when the data collection phase officially closed.

A total of 467 EMAS-registered organisations filled out the online questionnaire. In this paper 412 questionnaires were identified as usable to test the model, with a representativeness of about 10.23% of the total EMAS population in that period. This response rate is very relevant in terms of representativeness and it is one of the highest response rate ever achieved by a survey focused on EMAS organisations.

The respondents were located in 21 different Member States and the highest response rate was from Italy, Germany, Spain and Austria. The sample had different levels of turnover and had adopted EMAS at different times (Table 1).

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As indicated in the table 1 the sample is well represented also in terms of turnover and length of EMAS registration. About 40% of the total sample has a turnover higher than 50 millions of euros, while regarding the date of the first EMAS registration the sample is well balanced according to the five indicated categories.

Since we used self-reported data and all variables are measured using the same source, several procedural remedies were needed to minimize and control for common method variance. Following Podsakoff et al. (2003), we avoided long, complex questions, and we used a bipolar numerical scale with values and verbal labels for the midpoints of scales. Finally, respondent anonymity was guaranteed.

We also used Harman's single-factor test to reveal any bias. Although the reliability of this test is controversial (Podsakoff et al., 2003), Fuller et al. (2016) recently showed that this criticism is partially unfounded. The results of the test highlighted the absence of a single factor or one general factor accounting for the majority of covariance among the measures.

### *3.2 Development of variables and model specifications*

On the basis of our survey, we used the data to build the variables needed to test our model. One of the key variables was "managerial satisfaction", which is a broad concept that can be analyzed from several points of view. To decide how to measure this variable, we took into account that our sample was related to a survey that involved environmental managers from EMAS registered companies. We thus hypothesized that the satisfaction of the environmental managers could be estimated starting with their satisfaction with the work carried out by the environmental verifier which represents the final step in the periodical certification process. The environmental verifier acts as a third party audit and verifies the effectiveness of the EMS, and its capacity to obtain continuous improvements. In other words, the verifier assesses the work carried out by the environmental manager and each environmental manager also has high expectations regarding the contribution provided by the environmental verifier with the external audit (Bernardo et al., 2011) Table 2 reports the items of the questionnaire used to develop the variable, "managerial satisfaction". The environmental managers replied indicating their level of satisfaction, using a scale from 1 to 3.

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The same approach used for the variable “managerial satisfaction”, was also used for the other variables, and we decided to aggregate different questionnaire items to develop the variables. The knowledge of the verifiers was measured taking into account the main component of knowledge identified by previous studies (see for instance Ammenberg et al., 2001; Dogui et al. 2014). Managers were asked to answer the following question: “How would you rate your environmental verifier's knowledge of the following aspects?” rating (from 1 to 5 where 5 indicates very high knowledge) the knowledge of the particular environmental verifier. The aspects linked to the knowledge of the environmental verifiers and listed (also considering the requirements included in the standard ISO19011) after the aforementioned question were as follows 9: environmental protection; technical issues; organizational issues; knowledge of applicable environmental legislation; knowledge of EMAS requirements; sector-specific knowledge; independence; reliability; scope of examination.

Environmental performance was measured in a multitude of ways using self-reported information. According to a consolidated approach used in previous studies (see for instance Arimura et al., 2008, Testa et al. 2014, Lanoie et al. 2012), we measured the firms’ environmental performance using the survey question: “With reference to the production unit, how has the environmental performance of your organization changed over the last few years in the following areas?”. A five-point Likert-scale (where the value 1 indicates “not improved” and 5 “strongly improved”) was then used considering the following environmental aspects: efficiency in the use of materials, water consumption; waste production; quality/quantity of wastewater effluents; quality/quantity of air emissions.

The fourth variable to estimate was eco-innovation performance. According to the vision of eco-innovation described by Rennings at el. (2006), who distinguish between process and product innovation, we measured eco-innovation by asking managers to indicate their “level of agreement on the effect of EMAS on process and product innovation”. Respondents replied assigning a score from 1 to 5 (1: strongly disagree; 5 strongly agree), to a set of five items indicating process innovation: EMAS stimulates the adoption of green technology or BATs (Best Available Techniques); EMAS stimulates the level of investment in innovative environmental technologies; EMAS improves the level of investment by identifying more sustainable production processes; EMAS stimulates initiatives between registered companies and neighbouring companies (e.g. through product exchanges, energy exchanges, etc.); EMAS stimulates innovations linked with specific tasks or processes, such as : equipment maintenance, handling of chemicals , storage, dosing and dispensing. Similarly in the questionnaire, we listed three items used to estimated the performance in product innovation: EMAS influences the design and development of the products; EMAS contributes to assessing the environmental effects of new products or of substantial product changes; EMAS contributes to the adoption of innovative tools for assessing and enhancing the sustainability of products (e.g. Life-Cycle Analysis, Product/Organisation Environmental Footprint, Ecolabel).

Finally, to test our model, the last variable to develop regarded environmental reputation. Increasing corporate reputation is one of the main drivers that encourages an organization to adopt environmental initiatives (Testa et al. 2015). To measure the impact of managerial satisfaction on a firm’s reputation, we used the answers to the following question: “what kind of competitive advantage does your organisation experience by participating in EMAS?”. Managers replied indicating their level of agreement, using a scale from 1 to 5, with the following statements we aggregated to estimate the variable: improved corporate image in the eyes of local and national domestic customers and suppliers; improved corporate image towards

international customers and suppliers; iii) increase in consumers/customers' trust in the organization.

Table 3 shows that for all variables, the reliability is high since the Cronbach alpha coefficient is consistently higher than 0.7, as recommended when a combination of variables contributes to the development of a single construct (Cortina, 1999).

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#### 4. Results

To test our hypotheses we performed a structural equation modelling (SEM). In order to obtain the results through the SEM, we proceeded as follows.

Firstly, we checked the validity of the proposed measurement model by performing a confirmatory factor analysis (Anderson and Gerbing, 1988). The results indicated that the data fitness was acceptable: the comparative fit index (CFI) and the Tucker Lewis index (TLI) were close to 0.90 (0.901 and 0.883 respectively) and the root-mean-square error of approximation (RMSEA) was 0.077, lower than the recommended threshold of 0.08 (Iacobucci, 2010).

Secondly, convergent validity, discriminant validity and internal consistency were checked to validate the adequacy of the measurement model. All standardized loadings were found to be significantly related to their constructs ( $p < 0.001$ ) and higher than 0.5. The value of AVE ranged from 0.48 to 0.61, which is, except for the latent variable environmental performance, greater than the suggested threshold of 0.50 (Hair et al., 1998).

Discriminant validity is the degree to which items do not correlate with scores from other items that are not designed to measure the same construct. As we highlighted in the paper, and according to Hair et al. (1998) discriminant validity was positively verified by the fact that the value of Average Variance Extracted (AVE) of each construct is greater than the squared correlation among the latent variables.

Finally, the SEM revealed satisfactory goodness of fit indices,  $\chi^2 = 4.99$  and not significant, CFI = 0.992; TLI = 0.973; and RMSEA = 0.040. Table 4 shows the results of the structural equation model.

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The model highlights four significant and positive relations among the variables, whereas two relations were not significant. The first hypothesis was confirmed. Verifier knowledge positively influences managerial satisfaction. Following out theoretical model, the SEM confirms that the satisfaction of the environmental manager has a positive influence on environmental performance, (H4) but does not contribute to the adoption of eco-innovation by the organisation (H2). In addition, regarding the environmental reputation as the dependent variable, verifier knowledge is positively linked with eco-innovation performance (H3), while the relation with environmental performance was not confirmed (H5). Finally, our model considered the environmental reputation as an independent variable in order to verify its influence on managerial satisfaction (H6). In this case, the relation is significant and positive, which confirms that a high environmental reputation of an organisation contributes to increasing levels of satisfaction for the environmental manager confirming previous literature findings about job performance and job satisfaction (Christen et al., 2006), including the



contributions in the field of agency theory that, as described in the literature review, indicates a positive relation between job performance and job satisfactions (Brown and Peterson, 1994).. Figure 2 summarizes the results.

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## 5. Discussion

The results obtained with our model provide interesting indications on the relationships among the investigated variables, leading to a greater understanding as to how manager satisfaction originates from various drivers, is a driver itself for performance, and is influenced by reputation.

Firstly, we found a positive statistical relation between the perception of managers of the skills and know-how shown by the external verifiers and the level of satisfaction of such managers. Generally speaking, and according to authors experiences, environmental managers are interested in gaining added value from their relationship with the external verifier, not only because of the verifier's capacity to carry out the assessment in a thorough and independent way and, therefore, in reliably guaranteeing their certification. In most cases, in fact, what the environmental managers expect from the verifier is the ability to spot weaknesses and potential improvements in the environmental management system, which is fundamental for the effectiveness of the EMS. This “added value” comes from the knowledge provided in the feedback that the verifiers give to the manager. Thus, the manager will take “on-board” the indications coming, e.g., from the verifier’s recommendations or from the conclusions of the report. These indications can then be turned into improvements in the EMS.

Secondly, we checked for a direct influence of the managers’ satisfaction on the environmental performance. The outcome of our model shows that the higher their level of satisfaction, the better the environmental performance of their company. In fact, a manager may become more committed and make greater efforts in doing his/her job in terms of leadership, involvement etc when driven by strong satisfaction. In addition, a manager who is very satisfied is normally also eager and able to motivate people around him/her, and to provide a good role model. This can produce a “multiplier” effect, creating a positive working environment and encouraging others to collaborate in the same direction. Thirdly, satisfaction can also be seen as self-fulfillment stemming from the ability to achieve results. This produces a virtuous cycle, in which the satisfaction comes from the demonstration that even ambitious objectives in environmental performance can actually be achieved, which creates trust in being able to continue along the same route.

Our model also aimed to test the specific relationship between satisfaction and eco-innovation performance. In this case, the outcome of our study is not conclusive: the statistical relation between the two variables appears to be non-significant. This can be explained by the organisational approach companies adopt for environmental management. Whereas environmental managers are autonomous in taking decisions to prompt environmental improvement in the organisational and operational dimensions (such as working routines and procedures, operational modalities, changes in the layout, ordinary maintenance, training of employees), when it comes to “innovation” they need to plan investments which involves a higher level of decision taking. For example, when the adoption of green technologies is envisaged, the decision to invest cannot normally be taken by one manager (e.g. the

environmental manager or the EMS responsible), but needs wider consensus and, since it requires more economic resources, it needs to be discussed and approved at higher organisational levels. This means that the level of “satisfaction” of the environmental manager is less effective in influencing the outcome of the process. It might well be that a very satisfied environmental manager cannot take the decision to invest in a “greener innovation” on his/her own, but good performance depends on the co-decisions of several other types of managers in the organisation, with a very high level of uncertainty. Therefore, our study cannot draw conclusions regarding the relationship between the environmental manager satisfaction and the performance in terms of “ecoinnovation”.

Regarding the ability of performance to affect a company's reputation, our study only confirms a statistically significant relation with eco-innovation. At a first stage this could be interpreted as an unexpected result since EMAS requires to publish an Environmental Statement i.e. a public report that should influence positively the environmental reputation. Once again, this is linked with the particular context in which environmental management is carried out at the company level. When dealing with environment-related issues, company reputation is essentially built on the ability to engage stakeholders and gain their consensus. From this perspective, we can easily interpret the difference between environmental and eco-innovation performance in influencing reputation. As is well-known, environmental performance is very difficult to communicate: it involves technical competence, which is sometimes not measurable or “not tangible” by stakeholders may not be able to appreciate (as we have seen before with respect to the employees), and is affected by uncertainties or debated by the media (e.g. the greenhouse effect). Conversely, an “eco-innovation” performance is easier to explain and communicate to stakeholders, since it is more perceivable. Recycled products, lighter packaging, green technologies, product durability, water savings are all examples of innovations that can easily be understood or, in any case, can be more effectively described and communicated to a wide range of stakeholders (consumers, NGOs, researchers, etc.). This is why eco-innovation performance has a significant effect on reputation, whereas environmental performance turns out to be a non-significant variable in our model.

Finally, our study investigated the “reverse” relationship between reputation and manager satisfaction. Our aim was to understand whether a virtuous cycle can be created between these two variables. The idea is that satisfaction can be fed by an improvement in the company environmental reputation which, if this is true, can be deemed to activate beneficial spill-overs on the people involved in environmental management. Our model confirms this spill-over: when a company improves its reputation, this is most likely seen as a result of the effort made by the managers which, therefore, increases their level of satisfaction. This result confirms previous studies on agency theory about the positive relation between job performance and job satisfaction (Christen et al., 2006). In fact, in our model environmental reputation is not only a type of performance but is also influenced by eco-innovation performance.

## **6. Conclusions**

Our study contributes to the debate on the relation between managerial satisfaction and performance with a focus to the agency theory context. Since many papers have mainly focused on employee satisfaction and performance, the focus to the managerial perspective is relatively unexplored. In addition, considering the specific theme of our study i.e. the relation between environmental managers' satisfaction and environmental performance, our study has several managerial and policy implications.

A clear message is highlighted for top level managers (e.g. CEOs) regarding the environmental manager's satisfaction: environmental performance is positively related with the satisfaction of the environmental manager. Environmental performance is an important objective because, in the case of the increase of resource efficiency, it leads to reduced costs for companies by

increasing their competitiveness (Porter and van der Linde, 1995), as well as the continuous improvement principle set by the environmental certification. In other words, top level managers should consider the satisfaction of the environmental managers as a driver of success for the environmental management of the company.

Another managerial implication regards the selection criteria of the environmental verifier as an environmental certification body. Often, EMAS registered companies, especially SMEs, select their own verifier by comparing different offers and selecting him/her according to the finances they have available. This approach does not guarantee the most skilled verifier i.e. someone who could really contribute to the environmental management of the company. Considering that a skilled verifier could influence the environmental performance of the organisation, a higher cost for a highly skilled verifier could be a good investment with a shorter payback period compared to a low-skilled verifier.

Policy makers could take into account these results in their policies for environmental improvement. An environmental policy to reduce the pollution of a firm that aims to motivate and involve environmental managers is probably more effective than a policy that imposes rules with a top-down approach. In fact that approach could negatively impact on the “satisfaction” of managers.

The paper has some limitations. The first limitation is linked with an intrinsic aspect of the online survey. At the beginning of the questionnaire, we included a disclaimer for the organisations interviewed explaining that the survey aimed to collect the opinions of environmental managers. Despite this disclaimer, we cannot be fully sure that all the questionnaires were filled in by environmental managers. At the same time the focus on environmental managers could be seen as a limitation, since different managers could contribute to corporate environmental performance and reputation. The second limitation is linked to the nature of self-reported data. An important variable such as environmental performance was estimated on the basis of the opinion of the managers. This variable may thus be biased due to the environmental manager wishing to be viewed favorably by others (i.e. social desirability).

We invite future studies to replicate the approach of our paper, contributing to the field of satisfaction of environmental managers and environmental performance. A possible evolution of this research could deal with a different estimation of the key variable “managerial satisfaction”. Scholars could extend the measurement of the satisfaction of environmental managers starting from the more “traditional” leverage of employees’ satisfaction such as salary, independence, relations with colleagues, availability of free time. According to our results, the drivers of environmental managers’ satisfaction are the key determinants in improving environmental performance. Another future research could deal with the “agency problem”. As described, this problem highlighted by agency theory can be minimized by the sharing of ownership with the agent (Dalton et al., 2007), in our case the environmental manager. Future studies can sample the environmental managers to interview selecting them in a more specific way in order to test the possible solutions of the agency problem.

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## TABLES

<b>Turnover</b>	<b>% responding</b>	<b>Length of EMAS registration</b>	<b>% responding</b>
<b>Less than 1,000,000 euros</b>	7.7%	Adoption in 2002 or before	26.3%
<b>1,000,001- 2,000,000 euros</b>	6.3%	Between 1/2003 and 12/2005	17.3%
<b>2,000,001 - 10,000,000 euro</b>	24.4%	Between 1/2006 and 12/2008	21.9%
<b>10,000,001 – 50,000,000 euro</b>	21.1%	Between 1/2009 and 12/2011	19.4%
<b>Higher than 50,000,000 euro</b>	40.6%	After 1/2012	15.2%

Table 1. Sample features

<b>Variable</b>	<b>Abbreviation</b>	<b>Items used to estimate the variable</b>
Managerial satisfaction	Manag_satisf	a) Are you satisfied with the work carried out by your environmental verifier? b) Are you satisfied with the expertise of your environmental verifier with regard to auditing? c) Does your environmental verifier contribute to the improvement in environmental management in your organisation?

Table 2. Items of the questionnaire used to estimate the “managerial satisfaction” of the environmental managers interviewed.

<b>Variable</b>	<b>Abbreviation</b>	<b>Items</b>	<b>Alpha coefficient</b>
Managerial satisfaction	Manag_satisf	3	0.726
Verifiers Knowledge	Verif_know	9	0.926
Eco-innovation performance	Eco-innov_perf	5	0.821
Environmental performance	Envi_perf	8	0.892
Environmental reputation	Envi_rep	3	0.823

Table 3. Cronbach alpha coefficient of the variables



Structural equation model Estimation model = mlmv	Number of obs = 412			
	<i>Coefficient</i>	<i>OIM Std. Error</i>	<i>z</i>	<i>P&gt;z</i>
<b>verfknow -&gt; env_satisf</b>	.56983	.04161	13.7	0.000
<b>env_satisf -&gt; ecoinnov_perf</b>	.47128	.05857	0.80	0.421
<b>ecoinnov_perf -&gt; reput_perf</b>	.45445	.04676	1.44	0.000
<b>env_satisf -&gt; env_perf</b>	.12635	.05691	2.22	0.026
<b>env_perf -&gt; reput_perf</b>	.07497	.05217	1.44	0.151
<b>reput_perf -&gt; env_satisf</b>	.10012	.04877	2.05	0.040

Table 4. Structural equation model results