How to manage corporate reputation? The effect of enterprise risk management systems and audit committees on corporate reputation

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A R T I C L E   I N F O

A B S T R A C T

Research on corporate reputation has generally argued that reputational risk, or risk of reputation loss, stems from all company risks. As companies use enterprise risk management (ERM) systems to manage all their risks, we analyse the effect of ERM system quality on corporate reputation. Furthermore, as audit committees are in charge of supervising ERM systems, we analyse the effect of audit committee characteristics (i.e. independence and independent members' knowledge and diligence) on corporate reputation through their effect on ERM system quality. Our results for a sample of listed Spanish firms support consultants' arguments that ERM system is a useful tool for managing corporate reputation. Our results also show that audit committee independence improves corporate reputation through the ERM system. Finally, our findings also reveal a positive relationship between the average educational level of independent directors of the audit committee and ERM system quality. These results provide evidence that ERM systems are platforms to manage corporate reputations and suggest the importance of the audit committee as a supervisor of ERM system and as guarantor of corporate reputation.

1. Introduction

Over the last several decades, corporate reputation has gained increasing importance for both managers and academics. Corporate reputation is based on the expectations about the ability of the firm to fulfil the interest of its stakeholders. Many managers consider corporate reputation to be one of the most important intangible assets a firm has (Chun, 2005; Hall, 1992, 1993), and empirical evidence has shown that a good reputation facilitates stakeholder cooperation with companies (e.g. Cable & Turban, 2003; Keh & Xie, 2009; Makarius, Stevens, & Tenhiälä, 2017; Walsh, Mitchell, Jackson, & Beatty, 2009). Therefore, a good corporate reputation is considered a source of sustainable competitive advantages (e.g. Roberts & Dowling, 2002).

These findings have aroused great interest in the antecedents and management of corporate reputation. Researchers have analysed various determinants of corporate reputation, such as financial performance, risk, diversification, ownership structure, company philanthropy and characteristics of the board of directors (e.g. size, percentages of independent and female directors) (Brammer & Millington, 2005; Brammer, Millington, & Pavelin, 2009; Brammer & Pavelin, 2006; Delgado-García, de Quevedo-Puente & de la Fuente-Sabaté, 2010; Fombrun & Shanley, 1990). While this research has revealed several determinants of corporate reputation, researchers have not proposed a platform to manage corporate reputation. However, many consultancy firms (e.g. Deloitte, Ernst & Young and PwC) have suggested using enterprise risk management (ERM) systems to manage corporate reputation, and some academics have argued the need to validate this proposal (Gatzert, 2015; Gatzert & Schmit, 2016; Power, Scheytt, Soin, & Sahlin, 2009; Tonello, 2007).

When a risk drives a firm into a crisis, some stakeholders' interests may go unsatisfied, and the firm's corporate reputation may be eroded (Coombs, 2007; Eccles, Newquist, & Schatz, 2007). The more effective the ERM system is, the fewer crises a company will face and the less risk there will be to lose its corporate reputation (Branson, 2010; Bundy, Pfarrer, Short, & Coombs, 2017; Coombs, 2007). Therefore, an effective ERM system may help satisfy every stakeholder and, in turn, helps consolidate corporate reputation (Branson, 2010; Bundy et al., 2017; Coombs, 2007).

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Furthermore, ERM system is monitored by the company's audit committee[1] (Comisión Nacional del Mercado de Valores[2] [CNMV], 2015); Turley & Zaman, 2004). So, the audit committee may influence corporate reputation through its role in risk management. As of yet, however, there is no empirical evidence regarding the relationship between audit committee characteristics and the ERM system. As a consequence, the effects of the different audit committee characteristics (i.e. independence and independent members' knowledge and diligence) on corporate reputation through its role in risk management have not been analysed yet either.

Drawing on these arguments, our study has several aims. First, we develop arguments for and test the relationship between ERM and corporate reputation. Second, as audit committees have the duty to monitor ERM systems (Turley & Zaman, 2004), we analyse which audit committee characteristics influence ERM system quality to approach our third objective. Third, we analyse the mediating effect of ERM system quality in the relationship between audit committee characteristics and corporate reputation.

The remainder of this paper is structured as follows. In the second section, we present the theoretical background and hypotheses. First, we define corporate reputation and argue that there is a relationship between ERM system quality and corporate reputation to propose our first hypothesis. Second, we develop arguments and hypotheses about the relationship between audit committee characteristics and ERM system quality to examine, and in the third subsection, the influence of audit committee characteristics on corporate reputation through its effect on ERM system quality (mediation hypotheses). The third and fourth sections focus on the method and results, respectively. The paper closes with our main conclusions, discussion, managerial implications, limitations and future lines of research.

2. Theoretical background and hypotheses

2.1. ERM system quality and corporate reputation

Scholars have proposed several definitions of corporate reputation (Lange, Lee & Dai., 2011). Among them, we follow the conceptualisation of corporate reputation as the general level of favourability across stakeholders (Lange, Lee, & Dai, 2011). In particular, Fombrun (2002:9) proposes that 'corporate reputation is the collective representation of a company's past actions and future prospects that describes how key resource providers interpret a company's initiatives and assess its ability to deliver valued outcomes'. Following similar arguments, Wartick (1992:34) defines the term as 'the aggregation of a single stakeholder's perceptions of how well organizational responses are meeting the demands and expectations of many organizational stakeholders'. Therefore, corporate reputation is based on different stakeholders' expectations regarding a firm's capacity to satisfy their interests. The fulfilment of every stakeholder's interest depends on the firm's capacity to deliver value in a balanced way among them (Charreaux & Desbrière, 2001; Jensen, 2001).

Corporate reputation is a credible signal for stakeholders because if a company does not behave as expected according to its corporate reputation, it will lose the capital it has accumulated in this asset. The credibility of a firm's corporate reputation is based on its fragility, in other words, the contrast between its slow accumulation and its fast potential destruction (Hall, 1992; 1993). If

a company does not act according to the expectations generated by its corporate reputation, the company will lose the slowly accumulated capital in its corporate reputation. A few authors have characterised this fragility as reputational risk—that is, as the probability that a firm will lose its corporate reputation (Dowling, 2006). Reputational risk stems from every risk a company faces (e.g. financial, operational, environmental, commercial, etc.) (Dowling, 2006; Tonello, 2007) because all risks may potentially affect firm value delivering among stakeholders and, in turn, the fulfilment of their expectations. In fact, when a risk drives a firm into a crisis, the firm does not fulfil every stakeholders' interests and its corporate reputation may erode (Coombs, 2007; Eccles et al., 2007).

Reputational risk arises from the gap between stakeholders' expectations for how a company should behave and the company's actual behaviour (Eccles et al., 2007; Power et al., 2009). For example, if a firm's behaviour (e.g. low-safety product) is not aligned with its corporate communication (e.g. high-safety product) or standard industry behaviour, the risk assumed by the firm (i.e. its risk appetite) is higher than that expected by its stakeholders such that there will be a gap between stakeholders' expectations and the firm's actual behaviour. The larger the gap, the more likely it will be visible in a crisis, which may harm the firm's corporate reputation.

Most firm crises come from firms' unbalanced and unsustainable risk taking. For example, excessive operational risks by Merck (i.e. launch of an insufficiently tested drug) and by Exxon Valdez and BP (i.e. negligence in the construction of platforms and pipelines without following established procedures and standards) as well as excessive ethical risks by Wal−Mart (i.e. sale of products manufactured with child labour) and Volkswagen (i.e. tampering with their cars' diesel engines to meet emission standards) harmed certain stakeholders and immediately damaged these companies' corporate reputations (Arora & Lodhia, 2017; Ndedi & Feussi, 2015; O'Rourke IV, 2006; Vergin & Qoronfleh, 1998). Reputational crises demonstrate just how difficult it is for firms to recover from reputational damage, and in many cases, they never fully recover their corporate reputations (CMA Management, 2006; Tonello, 2007).

In this sense, an ERM system helps reduce the likelihood of reputation loss, or reputational risk, because it keeps every risk throughout a firm within a balanced risk appetite, reducing the likelihood that a risk will drive the firm into a crisis and decreasing the gap between stakeholders' expectation and firm performance. So, ERM fosters the fulfilment of stakeholder expectations and corporate reputation. Specifically, the Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2004) defines ERM as

> A process, affected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.

This process involves identifying the different risks to which a company is exposed. Subsequently, the risks have to be evaluated and prioritised based on the probability that each specific risk may trigger a damage as well as on the potential magnitude of the damage produced by that risk. With this information, the company can develop a map of risks, a document systematically organising all the risks the company faces. Second, the company needs to develop mechanisms, such as protocols, policies and action plans, to respond to the different risks in ways the firm deems acceptable.

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[1] The audit committee is a delegate committee of the board of directors and is composed of directors who assist the board in matters related to the supervision of financial reporting, the audit process and risk management.

[2] Spanish National Stock Market Commission.

Finally, the firm must continuously monitor the system to ensure process efficiency and update the system with new strategies and environments.

Firms design ERM systems in accordance with industry standards, firm strategy and firm communication in such a way that the ERM system forces a company to behave as stakeholders expect. Therefore, ERM systems can be used to reduce reputational risk and, thus, lessen firms' likelihood of facing a crisis (Branson, 2010; Bundy et al., 2017; Coombs, 2007). In fact, an effective ERM system reduces or even eliminates differences between firm behaviours and stakeholder expectations. Indeed, academics and consultancy firms (e.g. Deloitte, Ernst & Young and PwC) have highlighted the importance of ERM systems in managing corporate reputation (Gatzert, 2015; Gatzert & Schmit, 2016; Power et al., 2009; Tonello, 2007). However, research analysing this relationship has been scarce and has shown that lower risks favour corporate reputation, but this literature has only focused on financial risks (Brammer et al., 2009; Brammer & Pavelin, 2006; Fombrun & Shanley, 1990), ignoring other risks such as operational, ethical and environmental. These theoretical arguments and managerial suggestions lead us to propose the following:

Hypothesis 1. ERM system quality is positively related to corporate reputation.

2.2. Audit committee and ERM system quality

Although COSO (2004) asserts that boards of directors are responsible for overseeing ERM systems, boards delegate some of their responsibilities to specialised committees (Branson, 2010; DeZoort, Hermanson, Archambeault, & Reed, 2002; Liao & Hsu, 2013) to improve performance (Wild, 1996). In many countries, ERM system monitoring is delegated to an audit committee. Although some studies have recognised this committee function (Branson, 2010; Turley & Zaman, 2004), the few existing studies on this subject have simply documented the extent to which companies delegate this task to audit committees (Beasley, Branson, & Hancock, 2016; Cohen, Krishnamoorthy, & Wright, 2014).

According to agency theory, a company is contractual relationships network (Jensen & Meckling, 1976) among different stakeholders with different interests. In this sense, agency theory suggests that governance mechanisms favour a balanced value distribution among stakeholders (Charreaux & Desbrière, 2001; Jensen, 2001) and drive different stakeholder interests into cooperation. The audit committee is a governance mechanism that needs to function effectively in order to favour this balanced value distribution (e.g. Abbott & Parker, 2000; DeZoort et al., 2002). In fact, after corporate scandals such as Enron, WorldCom, Parmalat and Hollinger International, corporate governance is receiving more public attention (Aguilera & Cuervo-Cazurra, 2004), and an emphasis on audit committees in European governance codes (Collier & Zaman, 2005) has emerged. Audit committee effectiveness is usually linked to its composition and characteristics (DeZoort et al., 2002). Among audit committee characteristics, we focus on independence, knowledge background and diligence because they are commonly recognised in European governance codes (CNMV, 2015; Financial Reporting Council [; FRC], 2016; Regierungskommission, 2015), and previous literature has shown the impact of these characteristics on both boards of directors' and their committees' behaviour and performance (e.g. Abbott, Parker, & Peters, 2004; DeZoort et al., 2002; Johnson & Greening, 1999; Turley & Zaman, 2004; Zahra, 1989). However, these studies have focused neither on the committee's role in company risk management nor on corporate reputation.

2.2.1. Audit committee independence and ERM system quality

Independent directors are those who do not have relationships with firm managers or owners. The Spanish good governance code (CNMV, 2015), such as other governance codes (e.g. FRC, 2016; Regierungskommission, 2015), highlights the importance of audit committee directors' independence. Research has argued that independent directors bring objectivity to better serve the interests of every stakeholder because reputational concerns and judicial consequences motivate them to act diligently (Fama, 1980; Fama & Jensen, 1983). Further, directors' independence increases the effectiveness of the audit committee in several ways. For example, according to agency theory, managers are averse to disclosing financial information (Jensen & Meckling, 1976); however, the presence of independent directors improves the quality of financial disclosures (Abbott et al., 2004; Pucheta-Martínez & De Fuentes, 2007) and reduces opportunistic behaviour among managers (Abbott et al., 2004). Moreover, audit committees composed of independent directors improve the audit process (Zaman, Hudaib, & Haniffa, 2011) and the effectiveness of internal control (Raghunandan, Rama, & Read, 2001). The limited research developed so far has shown that board independence is positively correlated with ERM system implementation (Beasley, Clune, & Hermanson, 2005). These arguments encourage us to consider that independence in the audit committee may improve ERM system quality, which leads to our next hypothesis:

Hypothesis 2.1.a. *The proportion of independent directors on the audit committee is positively related to ERM system quality.*

The effectiveness of audit committee control is influenced by independent directors' knowledge and skills. Besides independence, the good governance codes (CNMV, 2015; FRC, 2016; Regierungskommission, 2015) highlight the importance of the knowledge and skills of directors on boards and their committees. Prior research has recognised that in order to monitor managers effectively, directors must have certain 'skills, experience, expertise and knowledge' (Hillman & Dalziel, 2003, p. 389). Previous literature has already argued that members' level and type of educational background are important sources of knowledge and skills that affect their decisions (Johnson, Hoskisson, & Hitt, 1993). As audit committee directors should know the risks that firms face (Branson, 2010; Tonello, 2007) and because these risks vary widely, an ERM system is better controlled when independent audit committee directors have diverse knowledge and skills.

Formal education is a source of qualifications, knowledge and skills (Blundell, Dearden, Meghir, & Sianesi, 1999; Schultz, 1961). Johnson et al. (1993) argue that highly educated members are able to manage more complex situations. In addition, high educational levels are associated with high information-processing capabilities and the ability to discriminate among stimuli (Schroder, Driver, & Steufert, 1967). Therefore, a committee with independent directors who have a high level of education is better prepared to face problems than a committee with a lower overall educational level. This reasoning leads to our next hypothesis:

Hypothesis 2.1.b. Independent audit committee directors' average level of education is positively related to ERM system quality.

Furthermore, the greater the range of knowledge provided by committee directors, the more sources of information, interpretations and perspectives a committee will have at its disposal (Hambrick & Mason, 1984; Wiersema & Bantel, 1992). Therefore, higher diversity in educational backgrounds may shed light on different kinds of risks, in turn improving the ERM system. Thus, we propose the following:

Hypothesis 2.1.c. Higher diversity in independent audit committee directors' educational backgrounds is positively related to ERM system quality.

2.2.2. Audit committee diligence and ERM system quality

Diligence is one of the most important determinants of audit committee effectiveness (Kalbers & Fogarty, 1993) and refers to members' willingness to work together to facilitate the proper functioning of the organisation (DeZoort et al., 2002). In fact, to achieve high ERM system quality, an audit committee must dedicate enough time and attention to supervise the system (Branson, 2010). The European good governance codes (CNMV, 2015; FRC, 2016) also recognise the importance of frequent board of directors and committee meetings; in fact, the most common proxy used by researchers to measure diligence is the number of audit committee meetings. Research has shown that effective committees meet regularly (Menon & Williams, 1994) and that the number of meetings positively influences the quality of financial reporting (Abbott et al., 2004; Beasley et al., 2005) and the quality of the audit process (Zaman et al., 2011). Additionally, audit committees that meet more frequently have more effective internal control (Bronson, Carcello, & Raghunandan, 2006). Therefore, we propose the following:

Hypothesis 2.2. The number of audit committee meetings is positively related to ERM system quality.

2.3. ERM system as a mediator between audit committees and corporate reputation

The previous arguments lead us to propose mediated hypotheses to test whether the effect of audit committee characteristics on ERM system quality has an impact on corporate reputation. That is, because audit committees monitor companies' risk management (Turley & Zaman, 2004) and ERM system quality may positively affect corporate reputation (Power et al., 2009; Tonello, 2007), audit committee characteristics may affect corporate reputation through its effect on ERM system quality.

Specifically, because of the impact that independence has on audit committee effectiveness (e.g. Abbott et al., 2004; Beasley et al., 2005) and, in turn, may have on ERM system quality along with the effect that ERM system quality may have on corporate reputation (Power et al., 2009; Tonello, 2007), we propose the following:

Hypothesis 3.1.a. ERM system quality mediates the positive relationship between the proportion of independent directors on the audit committee and corporate reputation.

Furthermore, independent directors' knowledge and skills influence their effectiveness (e.g. Blundell et al., 1999; Schultz, 1961; Johnson et al., 1993) and, in turn, may affect ERM system quality. Considering this effect as well as the effect of ERM system on corporate reputation (Power et al., 2009; Tonello, 2007), we suggest the following:

Hypothesis 3.1.b. ERM system quality mediates the positive relationship between the average level of education among independent audit committee directors and corporate reputation.

Hypothesis 3.1.c. ERM system quality mediates the positive relationship between the diversity in educational backgrounds of independent audit committee directors and corporate reputation.

Finally, diligence is one of the most important factors underlying audit committee effectiveness (Kalbers & Fogarty, 1993). Thus, the number of audit committee meetings may have an impact on

corporate reputation through audit committees' effect on ERM system quality. Therefore, we propose the following:

Hypothesis 3.2. ERM system quality mediates the positive relationship between the number of audit committee meetings and corporate reputation.

All the Hypotheses argued above are summarised in Fig. 1.

3. Research design

3.1. Sample

We tested our hypotheses on a sample of 123 listed Spanish companies for the 2008−2014 period. Our final sample is composed of 731 company observations. We consider the Spanish context to be appropriate for testing our hypotheses for different reasons. In relation to ERM system and audit committee functions, Spain adheres to the recommendations of the European Commission from 15 February 2005 (2005/162/EC) and recognises that supervision of ERM systems is a function of the audit committee. Another main reason is that Spain has a reputation ranking (MERCO) that has been employed by previous literature (Delgado-García et al., 2010; Fernández & Luna, 2007; García-Meca & Palacio; 2018; Odriozola & Baraibar-Diez, 2017; Sánchez, Sotorrío, & Díez, 2012) and has been published yearly since 2001, which allows us to conduct a longitudinal analysis. Furthermore, the Spanish National Stock Market Commission's guidelines require companies to report information related to their ERM systems, thus providing a framework for comparing the companies in the sample. In terms of the sample characteristics, the average company size (measured as the company's assets) was more than 41,000 million euros, the average number of employees was over 14,000 and the mean turnover was more than 32,000 million euros. Furthermore, the sample was composed of a wide diversity of Spanish companies covering practically all types of sectors, including manufacturing, financial, energy, construction, service, telecommunication and distribution companies.

3.2. Dependent variable

To measure corporate reputation, we used the reputation score for listed firms included in the MERCO ranking (see more information on Appendix A). This index was first released for the year 2001 and is the only index with applicable data available for a panel data analysis in Spain. The ranking includes the top 100 companies in Spain with the highest corporate reputation and has been employed in previous literature (Delgado-García et al., 2010; Fernández & Luna, 2007; García-Meca & Palacio, 2018; Odriozola & Baraibar-Diez, 2017; Sánchez et al., 2012). This index is similar to Fortune's 'Most Admired American Companies,' a widely used measure of corporate reputation in academic journals (e.g. Fombrun & Shanley, 1990; Roberts & Dowling, 2002; Vergin & Qoronfleh, 1998). Because MERCO ranks and provides reputation
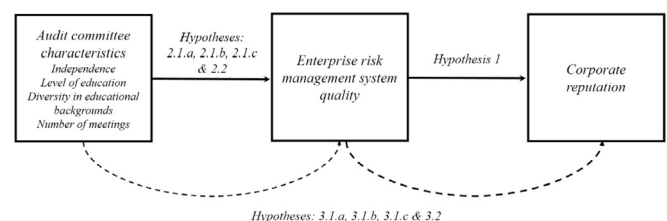

Fig. 1. Conceptual model.

scores only for the 100 most reputed firms, we had a measure with censored observations (e.g. Ahammad, Leone, Tarba, Glaister, & Arslan, 2017; Marler & Faugère, 2010; Thanetsunthorn, 2015). Our final measure was composed of 222 uncensored observations (i.e. company observations with MERCO reputation scores) and 509 left-censored observations (i.e. company observations without MERCO reputation scores).

3.3. Audit committee variables

The data for audit committee characteristics were obtained from the corporate governance reports of each company analysed for the years 2008–2014. We measured independence as the proportion of independent directors on the audit committee of each company and audit committee diligence as the natural logarithm of the number of committee meetings per year (Zhang, Zhou, & Zhou, 2007). Educational level was measured using a scale ranging from 1 to 5, with 1 = no university studies, 2 = three-year degree, 3 = five-year degree, 4 = master's degree and 5 = PhD. The final measure was the average level of education for all independent directors of the audit committee, which is similar to Carter (2006). Diversity in educational backgrounds was measured as the percentage of five possible educational backgrounds—engineering, science, business/economics, law and other social sciences—represented among the independent committee directors.

3.4. ERM system quality variable

To obtain the data for ERM system quality, we also analysed the corporate governance reports of each company for the years 2008–2014. ERM system quality is a complex multi-dimensional concept. There are no generalised measures of ERM system quality, and only a few studies have tried to measure specific aspects of the concept (e.g. Beasley, Branson, & Pagach, 2015; Beasley et al., 2005; Daud, Yazid, & Hussin, 2010; Gordon, Loeb, & Tseng, 2009; Hoyt & Liebenberg, 2008; Hoyt & Liebenberg, 2011; Li, Wu, Ojiako, Marshall, & Chipulu, 2014). However, none of these measures fits our longitudinal study of the ERM system quality on a sample based on listed Spanish companies. Some studies have asked only whether firms implemented an ERM system or not (Hoyt & Liebenberg, 2008, 2011; Li et al., 2014) and these indicators do not collect specific aspects about the quality level of the ERM system. Other studies have measured the level of ERM adoption using Beasley et al. (2005) survey-based scale (Beasley et al., 2015; Daud et al., 2010) that only allow a cross sectional analysis. Gordon et al. (2009) created an ERM index based on four indicators (i.e. strategy, operations, reporting and compliance) and these indicators are based on financial outcomes. Finally, Baxter, Bedard, Hoitash, and Yezegel (2013) used Standard & Poor's ERM quality rating that does not include Spanish companies. Thus, we developed our own multi-item scale based on COSO's ERM definition and on the Spanish National Stock Market Commission's guidelines for providing ERM system information in corporate governance reports in order to analyse the quality of companies' ERM system. First, two researchers analysed a subsample of 40 company reports to define how information could be standardised. After agreeing on the measurable items, the researchers independently analysed the reports of all the companies in the sample for each year of the analysis period. Subsequently, they met to resolve differences in their assessments and to award final scores to each company each year. Krippendorff's alpha indicates the validity of our analysis in terms of inter-rater reliability (inter-rater reliability of all the items was greater than 0.8).

Our ERM system quality measure was based on three items that reveal the objective performance of the companies in our sample in terms of ERM system quality: ERM scope, the company's definition of ERM and the company's use/non-use of the COSO framework.

In terms of scope, the Spanish National Stock Market Commission's guidelines ask companies to rate their ERM scope using a four-point scale. This scale corresponds to scores 5, 4, 3 and 1 in our scale shown below. We added an additional score (2) for companies that have an ERM system but do not specify its scope (Table 1). So, we used a five items scale to assess the ERM system scope in the companies analysed.

The second item for our ERM system quality measure is companies' definition of ERM. The various definitions of ERM indicate that it is a process that helps companies achieve their strategic goals by identifying, controlling and managing risks (Beasley et al., 2005; Moeller, 2007; COSO, 2004; ISO 31000). From this definition, we extracted three elements: mapping risk, seeing ERM as a process to control and manage risk and connecting ERM to strategic goals. We employed a scale from 0 to 3, indicating how many of these elements each company included in its definition of ERM. Specifically, we measured whether the company (a) has maps of risks (i.e. a risk portfolio identifying the impact and likelihood of the different risks that companies face), (b) identifies ERM as a tool to reach company objectives and (c) identifies ERM as a continuous process to control and manage risk (+1 point). Companies got a 0 if they did not identify any of these elements and a 3 if they identified all of them.

The third item used for our measure of ERM system quality is use/non-use of the COSO framework. The COSO framework is one of the most popular ERM frameworks (Bohn & Kemp, 2006; Daud et al., 2010). As many companies use this framework only for financial risk disclosure, we identified three levels: 1 = no COSO, 2 = COSO in relation to financial risk disclosure and 3 = ERM under the COSO framework.

Based on the three previous items, we determined ERM system quality for each company using principal component analysis with a varimax rotation. The results show a one-component solution via complementary criteria: eigenvalue, the scree plot and interpretability. We employed the factor loadings of this principal component analysis as our measure of ERM system quality. The resulting internal consistency reliabilities (Cronbach's alpha) are above 0.7. To test the reliability of our measures, we employed a confirmatory factor analysis. The composite reliability exceeds 0.7, and average variance is greater than 0.5 for all variables, which means that the factors account for more than 50% of the variance observed in the items. The measure of ERM system quality used was the factor score of the factor analysis.

3.5. Control variables

We used eight control variables: the lag of corporate reputation, audit committee size, company size, company age, return on assets (ROA), leverage, industry and year. As corporate reputation accumulates slowly (Fombrun, 1996; Schultz, Mouritsen, & Gabrielsen, 2001), it is a very inertial variable, so we included *reputation from the previous period* as a control variable. We based on the average value between the score of the company included in MERCO with the lowest level of corporate reputation and 0 to score those companies that were not in the previous year MERCO index (i.e. they were not among the top 100 most reputed firms in Spain according to MERCO) assuming a normal probability distribution. *Audit committee size* was measured as the logarithm of the number of audit committee directors. We included *company size*, because large companies, being more visible in markets, are expected to be more deeply examined by different public entities and, therefore, to exhibit a better value distribution among their stakeholders, so they tend to build strong corporate reputations. On the other hand,

Table 1
Indicators of ERM system quality measure.

ERM system scope	
The ERM system works holistically and continuously, consolidating risk management by area or business unit or by activity, subsidiaries, geographical areas and support areas (e.g. human resources, marketing or management control) at the corporate level.	5
The ERM system is implemented at the group or corporate level but neither by area or business unit nor by activity, subsidiaries, geographical areas and support areas (e.g. human resources, marketing or management control) at the corporate level.	4
The ERM system exists at the level of business areas or specific projects but does not consolidate information at the group or corporate levels.	3
The company has an ERM system but does not specify its scope.	2
The company does not have an ERM system formally defined.	1

ERM definition	
A. Companies have maps of risks (the risk portfolio that identify the impact plotted and likelihood of the different risks that companies face).	+1
B. Companies identify ERM as a tool to reach the objectives of the company.	+1
C. Companies identified ERM as a continuous process to control and manage risks.	+1
Total score of **ERM definition** = A+B+C	

COSO framework	
Companies that mention COSO related with the risks of the hole company.	3
Companies that mention COSO only related with their financial risks.	2
Companies that not mention COSO.	1

smaller companies are expected to be less controlled in markets and, thus, less careful in their value distribution, thereby leading to reduced corporate reputation. Empirical research has shown that larger firms have better corporate reputations (e.g. Cordeiro & Sambharya, 1997; Deephouse, 1997; Dunbar & Schwalbach, 2000; Fombrun & Shanley, 1990). Firm size was measured as the natural logarithm of the firm's total assets. Although there are ambiguous empirical findings about the effect of *firm age* on corporate reputation (Rao, 1994; Schultz et al., 2001), we introduced firm age—measured as the logarithm of the years the company has exited —because corporate reputation accumulates slowly (Fombrun, 1996; Schultz et al., 2001). Firms that have remained in business over long periods of market supervision can be expected to have kept their stakeholder satisfaction, so stakeholders are likely to extrapolate from past behaviours to generate expectations of companies' future behaviour (Weizsacker, 1980). Considerable research has also analysed the influence of *ROA* on corporate reputation (e.g. Brammer & Pavelin, 2006; Fombrun & Shanley, 1990). The chances of satisfying stakeholders' future demands are higher when the firm's value is higher. Stakeholders form their expectations accordingly so higher ROA will build corporate reputation. Next, we included *leverage*—measured as a firm's debt-to-equity ratio—because it has been employed in previous research on corporate reputation (e.g. Delgado-García, De Quevedo-Puente, & Díez-Esteban, 2013; Lee & Jang, 2007; Wei & Zhang, 2006). High leverage may threaten future returns and, thus, corporate reputation. Finally, we controlled for industry and year by introducing dummies. To calculate industry dummies, we used the CNAE (National Classification of Economic Activities Code), which largely corresponds with SIC(Standard Industrial Classification) codes. Company size, company age, ROA, leverage and industry were mined from the SABI (*Sistema de Análisis de Balances Ibéricos*, or the Iberian Balance Sheet Analysis System) database.

3.6. Analytical method

To avoid the problem of unobservable heterogeneity (Arellano, 2003), we used panel data analysis. Specifically, we used random-effect models because we employed time-invariant independent variables in our model (Wooldridge, 2009).

As we noted in the previous subsection, the MERCO index provided information only for the top 100 companies in Spain with the highest corporate reputation. As such, our dependent variable was left-censored, which means that in our sample, there are companies that are not in the top 100 published by MERCO. However, we know that these companies have a lower corporate reputation than the last company scored in the MERCO ranking. Therefore, we employed random-effects Tobit estimation processes in those models with corporate reputation as the dependent variable because this procedure is designed to estimate the parameters in samples in which the dependent variable is censored (e.g. Ahammad et al., 2017; Marler & Faugère, 2010; Thanetsunthorn, 2015).

Appendix B reports the equations used to test the effect of ERM system quality on corporate reputation (Eq. (1), Appendix B) as well as the effect of audit committee characteristics on ERM system quality (Eq. (2), Appendix B).

We tested the mediation hypotheses using the method outlined by Baron and Kenny (1986). Following this methodology, we employed three equations to test mediation (Baron & Kenny, 1986, p. 1177): 'first, regressing the mediator on the independent variable' (Eq. (2) in Appendix B); 'second, regressing the dependent variable on the independent variable' (Eq. (3) in Appendix B); 'and third, regressing the dependent variable on both the independent variable and on the mediator'. (Eq. (4) in Appendix B). Finally, 'the effect of the independent variable on the dependent variable must be less in the third step than in the second step' (Baron & Kenny, 1986, p. 1177).

4. Results

Table 2 presents the means, standard deviations and correlations of the variables, excluding year and industry dummies. Variance inflation factors range from 1.02 to 4.14, further indicating no problems of multicollinearity.

Table 3 shows the results of the panel data analyses. Model 1 analyses the effect of ERM system quality on corporate reputation. Model 2 presents the effect of audit committee characteristics on ERM system quality. Model 3 analyses the effect of audit committee characteristics on corporate reputation. Finally, Model 4 analyses the effects of audit committee characteristics and ERM system quality on corporate reputation, which enables the detection of mediated effects.

The results of Model 1 show that ERM system quality has a positive and significant effect on corporate reputation ($b = 648.67$, $p = .00$), thus supporting Hypothesis 1.

Table 2
Descriptive statistics and pairwise correlations.

	Mean	S.D.	Corporate reputation	ERM system quality	Audit committee independence	Level of education	Diversity in educational backgrounds	Audit committee meetings	Audit committee size	ROA	Leverage	Company size
Corporate reputation	5863.527[a]	1800.102	–									
ERM system quality	0.049	0.996	.499***	–								
Audit committee independence	0.561	0.272	.277***	.199***	–							
Level of education	3.442	1.057	.114**	.109**	.221***	–						
Diversity in educational backgrounds	0.35	0.195	.249***	.171***	.614***	.371***	–					
Audit committee meetings	1.803	0.424	.396***	.319***	.122***	.119**	.174**					
Audit committee size	1.284	0.247	.224***	.227***	-.096**	.082*	.175***	.226***	–			
ROA	0.029	0.072	.174***	.183***	.075*	.001	.116**	.039	.228***	–		
Leverage	4.89	9.08	.081*	.105**	.095**	.104**	.004	.155***	-.003	-.165***	–	
Company size	14.519	2.293	.715***	.517**	.164***	.047	.164***	.483**	.269***	.125***	.355***	–
Company age	3.580	0.874	.163***	.083**	-.148**	-.060	-.171**	.122***	.132**	.064†	-.055	0.198***

†p = .10.
* p = .05.
** p = .01.
*** p = .001.
[a] (Mean and standard deviation calculated using only uncensored observations).

Table 3
Results.

	Model 1		Model 2		Model 3		Model 4	
	Tobit Model		Random-Effects Model		Tobit Model		Tobit Model	
	Corporate reputation		ERM system quality		Corporate reputation		Corporate reputation	
Dependent variable t-1	0.738 (-0.092)	***			0.706 (0.091)	***	0.654 (0.092)	***
ERM system quality	648.674 (181.595)	***					643.423 (183.490)	***
Audit committee independence			0.259 (0.125)	*	1259.665 (644.153)	*	1219.863 (647.625)	†
Educational level			0.050 (0.025)	*	−75.342 (115.853)		−76.113 (114.967)	
Diversity in educational backgrounds			−0.243 (0.181)		624.513 (733.206)		690.650 (23.451)	
Audit committee meetings			0.089 (0.066)		311.420 (360.163)		216.364 (356.218)	
Audit committee size			−0.058 (0.012)		751.422 (505.407)		726.645 (500.340)	
ROA	−516.986 (1918.277)		0.985 (0.338)	**	−792.871 (2001.493)		−1407.886 (1965.853)	
Leverage	−37.074 (20.379)	†	−0.001 (0.003)		−31.2976 (20.051)		−38.241 (21.029)	†
Company size	957.579 (185.547)	***	0.172 (0.035)	***	1082 (185.121)	***	1020.2 (187.320)	***
Company age	175.500 (234.472)		0.035 (0.061)		339.948 (251.584)		301.342 (257.066)	
Year control	Yes		Yes		Yes		Yes	
Industry control	Yes		Yes		Yes		Yes	
Intercept	−16716.36 (2881.772)	***	−2.503 (0.604)	***	−20965.02 (3173.304)	***	−19995.52 (3229.187)	***
Wald chi2	450.18	***	559.70	***	429.19	***	430.66	***

†p = .10.
* p = .05.
**p = .01.
*** p = .001.

Model 2 reveals positive relationships between audit committee independence and ERM system quality ($b = 0.26$, $p = .04$), thus supporting Hypothesis 2.1.a, and between audit committee members' average level of education and ERM system quality ($b = 0.05$, $p = .04$), thus supporting Hypothesis 2.1.b. However, our results reveal that neither diversity in educational backgrounds (Hypothesis 2.1.c) nor number of meetings (Hypothesis 2.2) has a positive effect on ERM system quality.

To test the mediation hypotheses (Hypotheses 3.1.a. to 3.2), we used the procedure suggested by Baron and Kenny (1986). According to them, there is a mediation effect when four conditions are met. First, there must be a relationship between the predictor (audit committee characteristics) and the mediator (ERM system quality). Model 2 satisfies this condition only for audit committee independence ($b = 0.26$, $p = .04$) and for average level of education ($b = 0.05$, $p = .04$). The second condition requires a relationship between the predictor (audit committee characteristics) and the dependent variable (corporate reputation), which is satisfied in the mediated model (Model 3) only for audit committee independence ($b = 1259.67$, $p = .05$). The third condition specifies that there must be a relationship between the mediator (ERM system quality) and the dependent variable (corporate reputation), which is met in Models 1 and 4 ($b = 648.67$, $p = .00$; $b = 643.42$, $p = .00$). Finally, Model 4 shows that the relationship between audit committee independence and corporate reputation is marginally significant and positive ($b = 1219.86$, $p = .06$) once the mediator (ERM system quality) is included in the model. Then, fourth condition is met in the case of independence of audit committee because the effect in Model 4 ($b = 1259.67$, $p = .05$) is lower than that in Model 3 ($b = 1219.86$, $p = .06$). Therefore, all the mediation conditions are met for audit committee independence, so results support Hypothesis 3.1.a. This finding suggests a partial rather than a full mediation effect of ERM system quality in the relationship between audit committee independence and corporate reputation. However, results do not support Hypotheses, 3.1.b, 3.1.c and 3.2[3].

In terms of the control variables, the results confirm that both the lag of corporate reputation and company size have a positive and significant effect on corporate reputation in Models 1, 3 and 4. Models 1 and 4 reveal that leverage has a marginal and negative effect on corporate reputation. However, we did not find evidence that company age or committee size affect corporate reputation. Furthermore, our results reveal that company size and ROA positively affect ERM system quality, but we did not find evidence that committee size, company age or leverage affect ERM system quality.

5. Discussion and conclusion

Our results, based on a six-year study of a sample of Spanish companies, show a positive relationship between ERM system quality and corporate reputation. This evidence supports consulting firms' arguments that ERM systems are valuable for managing corporate reputation. Companies with high-quality ERM systems are able to satisfy the interests and expectations of their stakeholders and, therefore, consolidate corporate reputation because ERM systems force companies to behave as stakeholders expect.

This finding is consistent with previous work, showing that financial risk harms corporate reputation (Brammer et al., 2009; Brammer & Pavelin, 2006; Fombrun & Shanley, 1990).

Furthermore, this paper demonstrates audit committees' influence on ERM system quality and, in turn, corporate reputation. First, our findings support the notion that audit committee independence improves ERM system quality. This finding relates to previous research showing that independence is important to audit committee effectiveness (Abbott et al., 2004; Raghunanda et al., 2001; Zaman et al., 2011). Second, this result is consistent with Beasley et al.'s (2005) finding that board independence positively affects the extent of ERM implementation. Third, our findings support the idea that audit committee independence also influences corporate reputation through the ERM system (a mediated effect). That is, higher audit committee independence improves the quality of firms' risk management favouring the consolidation of corporate reputation. Finally, our findings show that apart from the mediated effect of audit committee independence on corporate reputation through ERM system quality, audit committee independence directly affects corporate reputation. Our result suggests that audit committee independence is a signal (Fombrun & Shanley, 1990; Spence, 1974) that increases stakeholders' expectations about a firm's capacity to deliver value. This result is consistent with those of previous empirical studies suggesting that boards with a greater proportion of independent directors signal more effective control and an orientation toward fulfilling all stakeholders' interests (Johnson & Greening, 1999; Zahra, 1989), which, in turn, enhances corporate reputation (Delgado-García et al., 2010).

In addition, our findings show that a higher average educational level among independent audit committee directors improves ERM system quality. This finding is in line with previous research on top management teams (Johnson et al., 1993; Schroder et al., 1967). However, we cannot confirm that educational level has an effect on corporate reputation through its effect of ERM quality. We did not find evidence that diversity in committee directors' educational backgrounds affects ERM system quality or corporate reputation. Although this result does not support our hypothesis, it is consistent with some research suggesting that the presence of knowledge and skills does not guarantee their use (Forbes & Milliken, 1999). Furthermore, we found no effect of diligence on ERM system quality or on corporate reputation. This finding does not support our hypotheses, but it is consistent with prior research that suggest that frequent audit committee meetings may be signal of internal firm problems (Zhang et al., 2007).

Although we believe this paper makes considerable contributions to extant academic research, we are conscious that our paper has several limitations. One of them is the censored nature of our corporate reputation variable, which restricts the analytical method. Also, we only analysed the effect of independent audit committee members' educational background. As a future study, it could be interesting to analyse the effect of other background characteristics, such as audit committee members' tenure and professional experience. Besides, because the number of audit committee meeting may not reflect completely the diligence of the audit committee, we think it would be interesting to analyse other proxies for diligence (e.g. meeting agendas)—that is, the issues addressed in audit committee meetings—to explore the implications of the audit committee in its function as risk supervisor. Besides, our study focuses on a sample of large listed companies due to the availability of data regarding ERM system quality. Therefore, our findings may not be generalisable to small and medium enterprises. As Ambroise and Prim-Allaz (2017) argued, small and medium companies also have to deal with reputational risks, but the risks they face may be of a slightly different nature than those large companies face. To manage these risks, small and medium

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[3] We also test the hypotheses using a random effect logit analysis. In these analyses, we employ a dichotomy variable that distinguishes the companies included in the MERCO index of the 100 companies with the highest reputation from those which are not included. The analysis confirms the results obtained in the random effect Tobit analysis. The only difference is that in this logit analysis the relation between audit committee independence and corporate reputation is fully mediated by ERM system quality, whereas it is partially mediated using Tobit random effect. Results from these findings can be obtained from the authors.

companies should improve their relationships with their stake-holders (Ambroise & Prim-Allaz, 2017). Although ERM systems are tools to manage these relationships, small and medium enterprises generally do not use such complex ERM systems. Therefore, future research may deepen on small and medium corporate reputation management. Future research could also focus on how the board of directors affects the ERM system because the board monitors company performance and is ultimately responsible for firm value and its distribution among stakeholders. It would also be interesting to study the effect of ERM on corporate social performance as we believe ERM favours a balanced distribution of value among all participants in a company. In addition, previous research has considered corporate social performance to be an antecedent of corporate reputation (Brammer & Pavelin, 2006; McWilliams, Siegel, & Wright, 2006). Therefore, it could be interesting to analyse corporate social performance's mediating role in the relationship between ERM system quality and corporate reputation. Additionally, future research should focus on studying reputational risk because it is a strategic risk that companies have to manage. Moreover, future research could focus on whether audit committees reduce firm crises through their effect on ERM systems. Finally, our research focused on a single civil law country (Spain) with particular context for analysis because ownership concentration is one of its main features (Díaz & García Olalla, 2003; Pucheta & Fuentes, 2007). Previous corporate governance research has shown that corporate governance mechanisms have different effects on firm outcomes in common versus civil law countries. Therefore, new analyses on common law countries should be an interesting future line of research.

Despite the limitations, our research makes relevant contributions to organisational studies. First, our paper contributes to the literature on corporate reputation by examining factors that strengthen firms' reputation. Specifically, our main contribution is twofold. On the one hand, we developed theoretical arguments justifying the notion that ERM systems are useful platforms for managing corporate reputation, contrasting other research on the determinants of corporate reputation with lower managerial implications. On the other hand, we found evidence that empirically supports consultancy advice. Moreover, we contribute to the literature on audit committee effectiveness, highlighting the importance of audit committee members' independence and educational background, specifically educational level. Previous research has focused on audit committees' effects on financial reporting, the audit process and internal controls. We extend this literature by focusing on audit committees' effects on ERM system quality and on corporate reputation. Furthermore, we advance the understanding of risk management as a key function in organisations as it helps achieve company objectives.

In terms of managerial implications, practitioners need to be aware that the ERM system is a useful tool for managing corporate reputation as it keeps company risks under control to achieve corporate objectives and fulfil stakeholder expectations. Further, this study highlights that board of directors should select highly educated and independent members for audit committee positions to improve ERM system quality. It also reveals that improving corporate governance mechanisms has consequences for firm management and, in turn, corporate reputation. Specifically, audit committee independence enhances corporate reputation by improving ERM system quality.

Acknowledgements

Appendix A

MERCO

MERCO ranking is based on a multi-stakeholder survey that has been conducted every year since 2001. The survey evaluates companies on six dimensions (i.e. economic performance, product quality, culture and workplace quality, ethics and corporate social responsibility, international and global presence, and innovation). The ranking is built in six stages. First, the survey asks for the perceptions of top managers in Spain. In 2015, survey responses came from 1215 Spanish top managers of (1) firms with revenues higher than 50 million euros, (2) firms that have been part of the ranking in previous years or (3) firms that have been part of the population surveyed in previous years. In this stage, managers generally mention around 800 companies. The result from this stage is a provisional list of the top 100 most reputable Spanish firms, which is then assessed in the next stages. Second, each of these firms is evaluated by several raters: financial analysts, non-governmental organisations, managers, unions, consumer associations and opinion leaders. In the third stage, a group of qualified researchers and analysts objectively assess the merit of the corporate reputations of the provisional ranking. In the fourth stage, information about the general public's opinion from the final consumer's point of view is integrated. The fifth stage integrates information related to the opinions of workers, university students, the general public and human resources managers about companies' reputations as places of employment. In the last stage, all the scores are added, and the companies' scores are evaluated out of a total of 10,000 points.

Items of the MERCO reputational index

1. Financial and economic performance
   (a) Book profit, (b) profitability and (c) quality of economic information
2. Quality of product or service
   (a) Product value, (b) brand value and (c) customer service
3. Corporate culture and workplace quality
   (a) Suitability of corporate culture to business projects, (b) workplace quality and (c) valuation and rewards
4. Ethics and corporate social performance
   (a) Business ethics, (b) commitment to the community and (c) social and environmental responsibility
5. Global dimension and international presence
   (a) International expansion, (b) strategic alliances and (c) online relationships with stakeholders (strategic position on the web)
6. Innovation
   (a) Research and development investment, (b) renewal of product and services portfolio and (c) new channels of distribution.

Because top managers take part in company selection in MERCO, we tested for the presence of financial halo. Specifically, we followed Brown and Perry's (1994) methodology. The results confirm that financial halo is not present, thus supporting previous research (Odriozola & Baraibar-Diez, 2017; Sánchez et al., 2012), indicating the lack of financial halo in the MERCO ranking.

Appendix B

Equation models

Eq. (1):

$$Corporate\_reputation_{it} = \alpha + \beta_1(corporate\_reputation_{it-1}) + \beta_2(ERM\_system\_quality_{it}) \; \beta_3(company\_size_{it}) + \beta_4(ROA_{it}) + \beta_5(leverage_{it}) + \beta_6(age_{it}) + d_t + d_i + \varepsilon_{it}$$

Eq. (2):

$$ERM\_system\_quality_{it} = \alpha + \beta_1(audit\_committee\_independence_{it}) + \beta_2(audit\;committee\;level\_of\_education_{it}) + \beta3(audit\;committee\;diversity\_in\_educational\_backbrounds_{it}) + \beta4(audit\_committee\_meetings_{it}) + \beta_5(audit\_committee\_size_{it}) + \beta_6(company\_size_{it}) + \beta_7(ROA_{it}) + \beta_8(leverage_{it}) + \beta_9(age_{it}) + d_t + d_i + \varepsilon_{it}$$

Eq. (3):

$$Corporate\_reputation_{it} = \alpha + \beta_1(corporate\_reputationit_{it}) + \beta_2(audit\_committee\;independence) + \beta_3(level\_of\_education_{it}) + \beta_4(diversity\_in\_educational\_backgrounds_{it}) + \beta_5(audit\_committee\_meetings_{it}) + \beta_6(audit\_committee\_size_{it}) + \beta_7(company\_size_{it}) + \beta_8(leverage_{it}) + \beta_9(ROA_{it}) + \beta_{10}(age_{it}) + d_t + d_i + \varepsilon_{it}$$

Eq. (4):

$$Corporate\_reputation_{it} = \alpha + \beta_1(corporate\_reputationit_{it-1}) + \beta_2(ERM\_system\_quality_{it}) + \beta_3(audit\_committee\_independence) + \beta_4(level\_of\_education_{it}) + \beta_5(diversity\_in\_educational\_backgrounds_{it}) + \beta_6(audit\_committee\_meetings_{it}) + \beta_7(audit\_committee\_size_{it}) + \beta_8(company\_size_{it}) + \beta_9(leverage\_{it}) + \beta_{10}(ROA_{it}) + \beta_{12}(age_{it}) + d_t + d_i + \varepsilon_{it}$$

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